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BY THE COMPTROLLER GENERAL

Report To The Congress

OF THE UNITED STATES

Minerals Management At The Department Of The Interior Needs Coordination And Organization

In its work on the importance of materials availability, GAO is conducting a continuing evaluation of the Federal policymaking process for meeting industrial and strategic materials requirements. An important element of that process is minerals management on Federal lands.

GAO found that the Department of the Interior lacks a coherent minerals management policymaking process, which can result in an imbalanced consideration of mineral resource management. Decisionmaking is fragmented among surface management agencies, without a requirement for consistent or cumulative evaluation of implications for domestic mineral policy.

Therefore, to provide balance between policies for mineral exploration and development and other, more explicitly stated policy objectives, GAO is recommending that the Secretary of the Interior develop a minerals management program plan. Setting fundamental objectives for which mineral resources will be managed should be a first step.



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To the President of the Senate and the
Speaker of the House of Representatives

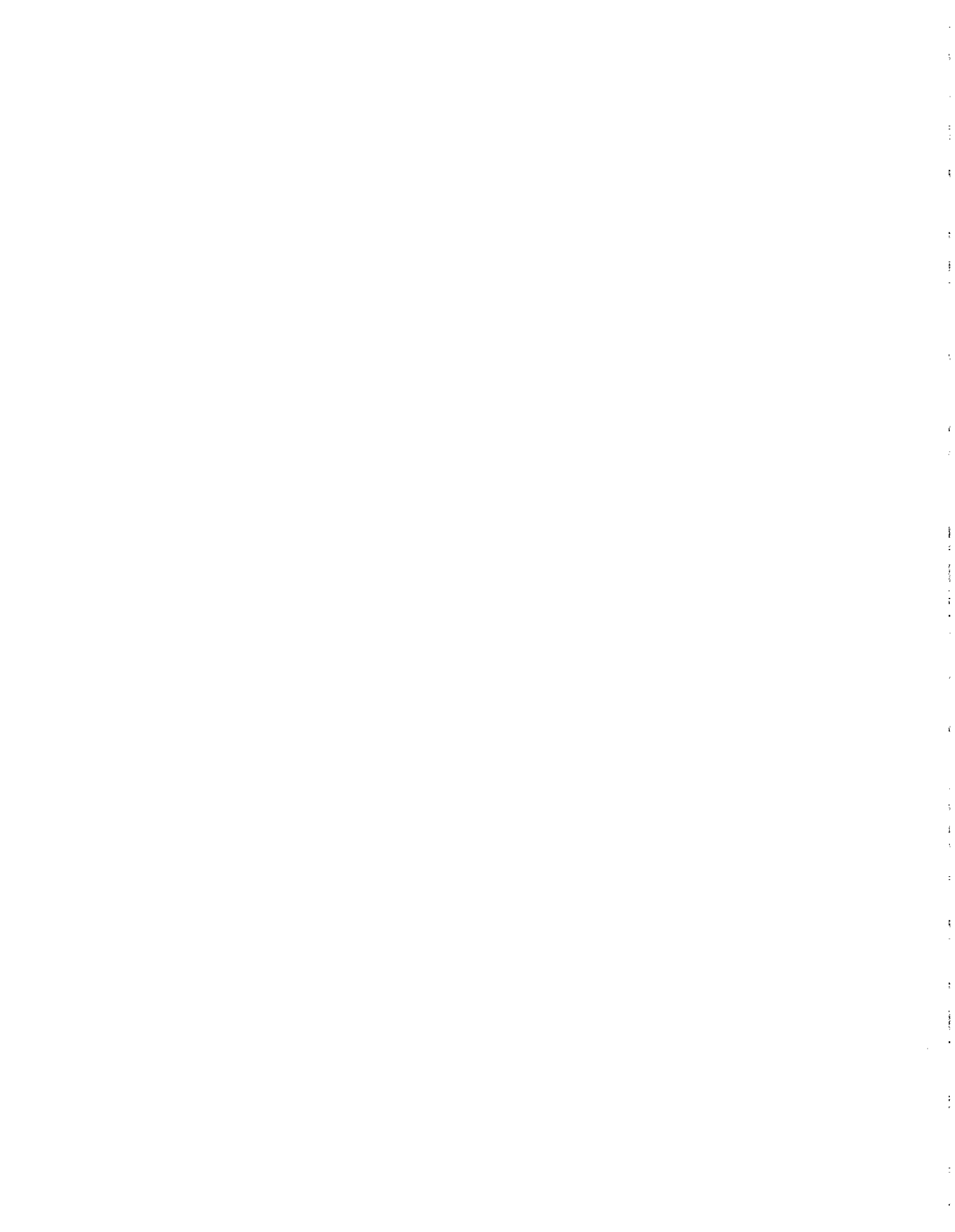
As part of a continuing evaluation of the Federal policymaking process for meeting industrial and strategic materials requirements, we evaluated policymaking for mineral management on Federal lands. This report examines how mineral policy for Federal lands has become less effective than policies for preservation and protection of nonmineral resources when land-use conflicts arise. It demonstrates the need for balanced mineral management program planning for federally controlled mineral resources.

Though the Department of the Interior was requested to review and comment on the draft of this report, no comments were received in the time allowed by P.L. 96-226. Comments provided by the Forest Service of the Department of Agriculture have been incorporated.

Copies of this report are being sent to the Secretaries of the Interior and Agriculture and the Director of the Office of Management and Budget.

Milton J. Aroslan

Acting Comptroller General
of the United States



D I G E S T

In its work on the importance of materials availability, the General Accounting Office has consistently tried to link that concept with the types of changes in the process of Federal materials policymaking that would be needed to promote it. Because materials-related problems vary so much--between the industries that produce and process them, between the materials commodities themselves, and even between different periods of time--GAO has stressed the goal of a better process for identifying materials problems, rather than a focus on any single policy.

In a review of minerals policy, GAO found that the Department of the Interior does not have an adequate minerals management policymaking process. Decisions affecting exploration and development of mineral resources are made ad hoc and without reference to larger strategies for affected commodities or markets or to the current and future potential of federally owned minerals to satisfy strategic and industrial requirements. Not having a minerals management policymaking process has contributed to.

- lack of a clear understanding of the public interest in federally owned mineral resources to balance tradeoffs in reaching land use and environmental protection decisions;
- potentially large Federal outlays to acquire valid mineral rights to resolve land use conflicts without full understanding of the costs, economic ramifications, and less costly alternatives;
- disregard for the repercussions of decisions to limit or prevent mineral activities for affected industries;

- limitation of continued acquisition of improved mineral resource information for areas closed to private industry;
- uncertainty as to the conditions for access and tenure needed to encourage investment in capital-intensive mining ventures;
- delays of ten to fifteen years in reaching decisions affecting access to Federal lands for mineral exploration and development.

GAO believes that, given the importance of Federal lands to a stable domestic supply of mineral commodities vital to national strategic and economic goals, poor management of mineral resources is unjustifiable. The weakness of management of federally controlled resources results from the Bureau of Land Management's passive and unpredictable administration of mining and leasing laws, the lack of effective linkage to the policy formulation, information, and analytical capabilities of the Bureau of Mines and the Geological Survey, and the fragmentation of decisionmaking responsibilities among surface management agencies. However, the overriding deficiency is the lack of a department-level program plan for managing federally controlled minerals and standards of accountability for Federal resource managers whose decisions affect mineral exploration and development.

PUBLIC INTEREST IN FEDERALLY OWNED MINERAL RESOURCES

When the effects of land use decisions on the full public interest in federally owned mineral resources is not assessed, secure sources and stable prices for mineral commodities can be overlooked or inadequately assessed. Since exploration for and development of minerals on Federal lands rests with the private sector, the Department of the Interior should be sensitive to the economics influencing private sector decisions on Federal lands. Access and tenure should be denied only where an identifiable public interest would be unnecessarily or permanently damaged. (See ch. 2.)

Furthermore, the Department must consider any public interest not represented in market conditions. Included in these non-commercial interests are such concerns as secure mineral supplies as indicated in the Mining and Minerals Policy Act. Of particular importance is the potential effect of a Federal land use decision to severely limit or to close a source of such critical

strategic minerals as cobalt, platinum, tin, or chromium. (See ch. 2.)

The economic and security costs of decisions restricting mineral exploration and development on Federal lands are not now regularly, consistently, or cumulatively evaluated before decisions are made, nor are they periodically reassessed. Policies which make lack of evidence of marketability sufficient grounds to withdraw lands from exploration, ignore the economic and, in some cases, strategic importance of federally owned mineral resources. This can relegate mineral concerns to a subordinate position in some cases and weaken effective management of valuable resources. (See ch. 4.)

CONCLUSIONS

Growing national awareness of the strategic importance and uncertain sources of some minerals is leading to development of a strategic minerals policy. In 1980, the Congress enacted the National Materials and Minerals Policy Research and Development Act. It establishes the Executive Office of the President as the focus of policymaking in this area.

Any national policy for assuring availability of such strategic minerals as cobalt, tin, chromium, and platinum must be formulated in light of the potential of federally controlled resources and the ramifications of Federal land use decisions for domestic supply of these commodities. In general, there appears to be a need to improve access to Federal lands for mineral exploration and development while continuing to protect social and aesthetic values. Improving access for mineral prospectors and mining operations will best take the form of clarifying the conditions under which exploration and development will be allowed to occur for all types of minerals, including such less publicized but equally important industrial minerals as sodium, talc, and borates.

RECOMMENDATION TO THE SECRETARY OF THE INTERIOR

GAO recommends that the Secretary of the Interior

develop a mineral management program plan which outlines and discusses in detail the objectives and goals of the Department of the Interior with respect to the key questions of Federal mineral resource management. Further, the Secretary should examine how such an explicit statement of objectives could be used to evaluate and provide consistency to the Department's mineral-related budget submissions, program proposals, and administrative actions. The plan should include specific national objectives for the Department's mineral resource programs, explain criteria for establishing priorities for mineral exploration and development, examine constraints to long-term mineral management goals and alternatives for coping with them, and devise strategies for anticipating and contributing to national industrial and strategic requirements. Development of the mineral management program plan should provide an opportunity for public and industry participation and coordination with local and regional planning agencies.

GAO further recommends that, as its recommendations for a long-range mineral management plan are implemented, the Secretary of the Interior also evaluate the need to consolidate or otherwise coordinate the Department of the Interior's mineral resource authorities, such as assigning responsibility for all mineral management functions to a single Assistant Secretary.

AGENCY COMMENTS

Though the Department of the Interior was requested to review and comment on the draft of this report, no comments were received within the time allowed by P.L. 96-226.

The Forest Service of the Department of Agriculture reviewed the report draft and suggested some technical changes. These changes were evaluated and incorporated.

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ABBREVIATIONS

| | |
|-------|---|
| ACEC | Area of Critical Environmental Concern |
| BLM | Bureau of Land Management |
| EIS | Environmental Impact Statement |
| FLPMA | Federal Land Policy and Management Act |
| GAO | General Accounting Office |
| GSA | General Services Administration |
| IMP | Interim Management Policy |
| NEPA | National Environmental Policy Act |
| OTA | Office of Technology Assessment |
| PSD | Prevention of Significant Deterioration |
| RARE | Roadless Area Review and Evaluation |



CHAPTER 1

INTRODUCTION

The abundant mineral resources of the United States have contributed to the development of an industrialized economy and a high standard of living. Historically, Government policies have encouraged access to the Federal lands for the development of domestic energy and mineral resources to contribute to the Nation's economic and industrial development.

On the other hand, in the last 20 years, public interest in protecting and preserving surface resources on Federal lands has grown. During the last decade, a variety of Federal policies have been enacted to protect the environment and to preserve cultural and aesthetic resources. Some Government policies designed to protect these resources have restricted access to Federal lands for domestic mineral exploration and development. Therefore, such decisions as wilderness and national monument designations, though not "mineral" decisions per se, have significant implications for mineral policy because these single-use designations rule out access, add costs, or increase uncertainties of efforts to find and produce mineral commodities.

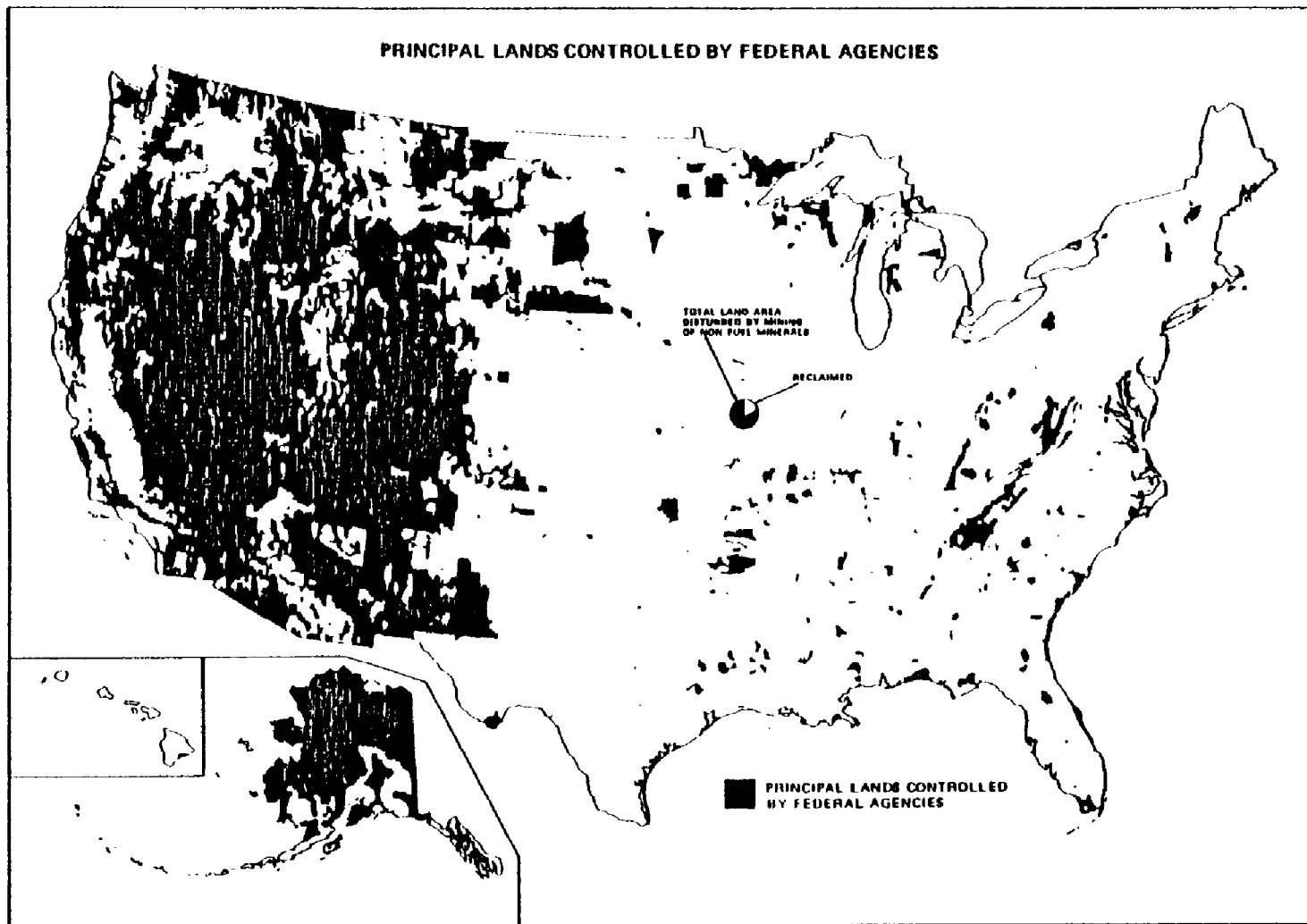
Cheap, secure mineral supply is fundamental to an industrial economy. Federal land use decisions must consider the increasing energy and mineral needs of the Nation's economy, in determining how to counter growing dependence on foreign sources for supplies of energy and minerals while also protecting its natural beauty. Both the public and the Congress are increasingly concerned about the need for future exploration and development of minerals and preservation of aesthetic resources. Representatives of the Western States are particularly concerned about achieving balance between preservation and development.

THE IMPORTANCE OF FEDERAL LANDS FOR MINERAL SUPPLY

Federal lands are an essential part of the national minerals base. More than 770 million acres and over 800 million acres of subsurface mineral rights are owned by the Federal Government, largely in the western portion of the country. In fact, more than 90 percent of federally owned land is in Alaska and 12 Western States. The amount of federally owned land in each State is graphically demonstrated by the map on page 2.

The natural forces that created the rugged topography and varied geology in the Western States and Alaska have also concentrated a great natural storehouse of mineral wealth. These

PRINCIPAL LANDS CONTROLLED BY FEDERAL AGENCIES



OVER 780 MILLION ACRES OR ABOUT ONE THIRD OF THE LAND IN THE UNITED STATES IS CONTROLLED BY THE FEDERAL GOVERNMENT. IN COMPARISON THE AMOUNT OF LAND AREA DISTURBED BY THE MINING OF NON FUEL MINERALS FROM 1930 THROUGH 1971 REPRESENTS ONLY 2.3 MILLION ACRES

States could be the country's major hope for maintaining or increasing domestic mineral production because of their immense land areas, varied geology, and vast undeveloped areas.

BACKGROUND AND LEGISLATION

In the past, exploration and development of federally owned minerals were left almost entirely to private enterprise. The mining and leasing laws for disposing of federally owned minerals were designed with this private enterprise role in mind. For assuming the high-risk, capital-intensive role of looking for and bringing minerals to the market, private companies and individuals receive the right to develop the minerals they discover.

The Congress recognized the desirability of continuing private sector development of minerals in such legislation as the Mining and Minerals Policy Act of 1970 and the Federal Land Policy and Management Act of 1976.

In October 1980, the Congress specifically required the President to direct the Secretary of the Interior "to act immediately within the Department's statutory authority to attain the goals contained in the Mining and Minerals Policy Act of 1970." This provision was contained in the National Materials and Minerals Policy Research and Development Act (P.L. 96-479) which established institutional arrangements for material and minerals policymaking.

For federally owned mineral rights, the Government retains administrative responsibility for laws governing the private sector's mineral activities. However, to preserve and protect nonmineral resources on Federal lands, a number of laws to prohibit or restrict private access have given the Government a greater voice in where, when, and how mineral exploration and development will occur. Also, regulations and requirements for mineral exploration and development have become more restrictive in pursuit of these protective goals.

RESPONSIBLE LAND MANAGEMENT AGENCIES

For the purposes of mineral resource disposition, Federal lands can be divided into three categories. Public domain is land that has never left Federal ownership or was obtained in exchange for lands or timber in the public domain. Acquired lands are those areas which have been purchased or obtained by exchange for purchased, condemned, or donated lands, or for timber on such lands. Withdrawn lands are areas of public domain or acquired lands isolated from all but specified uses.

The Department of the Interior controls most of the public domain, and the Forest Service controls the highest percentage of the total acquired lands. Withdrawn lands are managed by a multitude of agencies.

Conditions for mineral exploration and development differ on public domain and acquired lands. Minerals on the public domain are disposed of by claim/patent, lease, or sale. Generally, all hard rock minerals are locatable (acquired by claims and patents for fee title ownership) under the Mining Law of 1872. ^{1/} Fuel and specified nonfuel mineral compounds are leasable, as specified in the Mineral Leasing Act of 1920, as amended. All minerals on acquired lands are explored for and developed under the terms of leases. On most Federal lands, certain construction-type mineral resources, "common varieties" of sand, gravel, and stone, are salable, under the terms of the Materials Sales Act of 1947, as amended.

Lands withdrawn from the operation of the mining, leasing, and materials sales laws are managed for the uses and by the Federal agencies specified in withdrawal orders or public laws. Conditions for mineral exploration and development on such lands are generally restricted to prevent disruption of the mandated or regulated land use.

Though many agencies have surface management responsibilities, the Department of the Interior is the lead agency for Federal mineral matters. Mineral management functions of the Department are split between the Assistant Secretary for Lands and Water and the Assistant Secretary for Energy and Minerals. The Bureau of Land Management, under the Assistant Secretary for Lands and Water, has primary responsibility for administering the mining laws for all Federal land surface management agencies in addition to being responsible for surface land management for most public domain lands. Under the direction of the Assistant Secretary for Energy and Minerals, the U.S. Geological Survey collects information about mineral resources including those on Federal lands, and performs certain supervisory and royalty setting functions for mineral leasing. Also, the Bureau of Mines performs some Federal land mineral reserve assessments as well as collecting and analyzing data relevant to national mineral supply.

The Secretary of the Interior retains the final decision-making responsibilities for administering the mining and leasing laws on all federally owned land but has delegated most of these

^{1/31} U.S.C. 21 et seq. For the purposes of this report, the term General Mining Laws will be used with respect to hard rock minerals and refers to the 1872 law and other statutes.

responsibilities to the Director of the Bureau of Land Management, who has further delegated many technical functions to surface management agencies. Particularly, the Department of Agriculture's Forest Service has extensive responsibility for managing mineral resources and for surface resource protection on National Forests. The National Park Service has assumed many of these responsibilities for national parks and monuments. Many of these agencies' mineral responsibilities have been created ad hoc, are entirely decentralized, and are not directed by a structured, standardized national management policy for Federal mineral resources. Forest Service mineral responsibilities have been described in laws that relate to both minerals and surface management.

PRIOR STUDIES AND REVIEWS

The subject of management of federally owned minerals has been examined repeatedly since the mid-1960s, spurred primarily by the environmental protection movement and criticism of the General Mining Laws. More recently, concern for long-term availability of minerals for strategic and industrial requirements has received attention.

The Public Land Law Review Commission (a legislatively mandated body of U.S. Senators, Representatives, Federal agency officials, and private representatives) issued a report in 1970 detailing problems in public land laws and recommending solutions. Essentially, this report, One Third of the Nation's Land, recommended land use planning for all public lands, seeking maximum public benefit by providing for multiple uses rather than single, exclusive uses wherever possible. Where protection of public values required restricting private mineral exploration access to a given area, the Commission recommended thorough mineral evaluation and continuing mineral assessment for these closed lands.

In 1977, a Department of the Interior task force issued a report on the availability of federally owned mineral lands for mineral exploration and development. This report included recommendations for making an inventory, systematic review, and consistent procedures for analyzing the effects of land withdrawals on mineral exploration and development, but the Secretary of the Interior disclaimed the view and policies expressed in the report, noting that they did not represent the Department's official position.

The Office of Technology Assessment issued a report on management of minerals on federally owned lands in April 1979. This report, Management of Fuel and Nonfuel Minerals in Federal Land: Current Status and Issues, contains a description of the structure of mineral industries and a discussion of options

for alleviating problems in providing future mineral supply from Federal lands. The problems stem from conflict between mineral disposition systems, between mineral and nonmineral land uses, and between Federal, State, and local control and payment requirements. Rather than firm recommendations for changes in Federal management practices, the report suggests options for solving the problems. Each problem has three or four options, ranging from minor modification of existing practices to major readjustments of laws and practices.

A June 1980 Congressional Research Service report, Minerals Policy Issues, prepared for the Senate Committee on Energy and Natural Resources, discusses various nonfuel mineral policy issues and options. It points out that, although various commissions, congressional committees, studies and reviews have addressed mineral policy issues, most of the problems reviewed by these studies still exist today. One such problem is that the United States is more than 50 percent dependent on foreign sources for 19 nonfuel minerals. Furthermore, various segments of the Nation's mining and mineral processing industries seem to be becoming less competitive, and a number will experience a decline in their share of the domestic market by the year 2000. The report notes that many critics blame Federal minerals policy, or the lack of such a policy, at least in part for this decline.

In August 1980, the Subcommittee on Mines and Mining of the House Committee on Interior and Insular Affairs issued a report on U.S. Minerals Vulnerability: National Policy Implications. The report suggests a need for Federal departments and agencies to recognize and act upon mineral problems before crisis situations develop. The report recognizes that the benefits of developing the Nation's natural resources must be balanced with other considerations such as the need for environmental protection but notes that only by the adoption of a national nonfuel mineral policy can a system of planning and coordination be developed that will assure a resolution of conflicting land uses. ^{1/} The Subcommittee report concludes that the Federal Government, rather than undertaking the responsibility of assuring adequate mineral resources, has exerted an adverse influence on domestic mineral development.

We have also examined a number of the information systems which support the Department of the Interior's mineral policy responsibilities. Those include reports on the Bureau of Mine's Mineral Availability System and the Geological Survey's

^{1/}Subsequently, the Congress enacted P.L. 96-479 which aims to develop a Federal materials and nonfuel mineral policy.

Computerized Resources Information Bank ("The Department of the Interior's Minerals Availability System," EMD-78-16, July 17, 1978 and "The Department of the Interior's Computerized Resources Information Bank," EMD-78-17, July 17, 1978) pointed out these systems' potential for evaluating the economic effects of proposed decisions, such as those for Federal land disposition. "Interior Programs for Assessing Mineral Resources on Federal Lands Need Improvements and Acceleration" (EMD-78-83, July 27, 1978) pointed out the need to better coordinate public land use decisionmaking programs with the Geological Survey's mineral resource assessments. "Actions Needed to Increase Federal Onshore Oil and Gas Exploration and Development" (EMD-81-40, February 11, 1981) discussed the need to make more lands available for leasing, reduce the number and severity of restrictive lease stipulations, and expedite the processing of Federal leases and drilling permits.

We also developed a related report on legislative options for overcoming some criticisms of the General Mining Laws. This report, "Mining Law Reform and Balanced Resource Management" (EMD-78-93, February 27, 1978), suggested greater secretarial discretion with compensation provisions.

CURRENT MINERALS POLICY ISSUES

Congressional and industry critics of the Department of the Interior have charged the agency with failure to develop a national minerals policy and to allow a balance between preservation and minerals development policies for Federal lands. Department officials contend that most environmental and preservation legislation provides specific direction and goals as opposed to the very general policy guidance contained in minerals policy legislation. This, they say, leaves the Department with conflicting guidance.

OBJECTIVES, SCOPE, AND METHODOLOGY

We made this review to analyze current mineral policies for Federal lands--how they are being implemented, and how the Interior resolves conflicts between mineral and nonmineral uses of the Federal lands. Based on the assumption that sound decisions would be the result of thorough, objective consideration of feasible alternatives, with full analysis to identify the alternative promising the most cost-efficient benefit, we gathered general information, through interviewing officials and reviewing decision documents of the Department of the Interior, to determine how implications for national mineral policy were evaluated by the decisionmakers.

While we are currently reviewing specific aspects of the problems confronting fuel and nonfuel mineral production on Federal lands, we consider this overview of the uncertain "fit" between mineral resource policies and policies for other resources a reflection of the bigger problem inhibiting mineral exploration and development on Federal lands. Our past reviews of the conflicts among various land use objectives, particularly the conflict between energy exploration and preservation/protection, indicated the need to examine all the various resource and land use policies for the potential effects on workable policies for development of both energy and nonenergy minerals on Federal lands. Otherwise, an ambiguous, complex situation could be made worse by premature changes.

To arrive at our conclusions and recommendations, we held interviews and discussions with Federal Government officials of the Departments of the Interior, Agriculture, and Defense. Included were the Bureau of Land Management, the U.S. Geological Survey, the Bureau of Mines, the National Park Service, the Office of Mineral Policy and Research Analysis, the Office of the Solicitor, and the Forest Service. We also held discussions with representatives of mining and exploration companies, the American Mining Congress, State mining and mineral professional associations, and State offices of natural resources.

Also, we reviewed and analyzed a wide range of documents and publications. Included were legal and technical journals and a number of books on mineral policy history and economics. Among documents of the Department of the Interior we reviewed Solicitor's opinions, decision documents, decisions of the Interior Board of Land Appeals, Public Land Statistics, land use plans and related documents, and publications of the Bureau of Mines. We identified relevant documents and sources by relying on the guidance of experts and professional opinion.

Geographically, we performed our evaluation in Washington, D.C., Colorado, Utah, Idaho, California, Nevada, and Alaska. Our work in Alaska was limited to one specific decision relating to a national park and did not include the broader issues of the Alaska Native Claims Settlement Act or State and Federal land selections then under consideration. This review took place from December 1979 through November 1980.

Our primary emphasis was on nonfuel minerals subject to the mining and leasing laws rather than the disposal laws for surface materials. To the degree it seemed applicable, we included information from separate, on-going GAO reviews of onshore energy mineral leasing programs, primarily for coal, oil, and gas. In effect, our efforts were directed toward a survey of mineral policy for Federal lands as it is stated, as it is practiced, and as it is viewed by those who develop and implement it.

CHAPTER 2

MINERAL EXPLORATION AND

DEVELOPMENT ON FEDERAL LANDS

As the country's largest potential source of future mineral supply, Federal lands are particularly important to secure stable domestic mineral production. This potential production is central to any discussion on domestic mineral supply.

The question of how to balance decisions between the need to preserve some natural resources and the need to develop others is, of course, at the heart of the dilemma facing Federal land managers. These land managers, the Secretary of the Interior, the Congress, and all others interested in attaining the maximum public benefit from Federal lands are faced with questions of quantity--how much land to allocate among conflicting uses when multiple uses are impossible--and questions of quality--which lands are most valuable for each of the conflicting uses. In this regard, examination of the best figures available on relative amounts of land area allocated to the various uses reveals that mining is among the less extensive land uses nationally.

Not only access to, but conditions governing the use of the land are products of determination by Federal land managers and the Congress for land use requirements. Efforts to make such determinations for lands of potential or unknown mineral value must be sensitive to the market conditions which influence the private sector's exploration and development role. To encourage that role, conditions of access and tenure must be realistic and not impose unnecessary costs or risks.

FEDERAL LAND MINERALS

Minerals found in federally owned lands are valuable assets with great potential to contribute to economic wealth and, in some cases, national security. Minerals produced under terms of a lease also produce significant revenues; preliminary estimates for royalties collected in fiscal year 1980 are \$2.6 billion, the majority from oil and gas leases. Historically, much of this country's mineral supply has come from federally controlled lands. Unfortunately, no precise data have been maintained to measure the mineral contribution of Federal lands.

Recently, in background work for the President's Nonfuel Mineral Policy Review, the value of nonfuel minerals other than sand and gravel produced from public lands in 1977 was estimated to be 30 percent of the total value of domestic mineral production in that year or approximately \$4 billion

of \$12.5 billion. It was further estimated that for copper and silver, current and previous Federal lands provided 94 percent and 93 percent respectively of the total U.S. production in 1977. Also, a recent Office of Technology Assessment report on the management of minerals on publicly owned lands, Management of Fuel and Non-fuel Minerals in Federal Lands, evaluated the potential of Federal land for producing 13 minerals and found that, for those minerals with sufficient resource data upon which to base judgments, the potential was high.

This significant past and potential future contribution of Federal lands to mineral supply is generally unquestioned. What is questioned is where, when, and how mineral exploration and development should occur in the future. Also questioned is how these decisions should be made.

These questions are not arising, however, from examination of the Federal Government's policies for mineral resources on Federal lands per se. Rather, a myriad of land decisions which include mineral activity restrictions or exclusions are being considered individually.

Furthermore, Federal lands are, in some cases, being administered without reference to the effects of restrictive policies on mineral supplies and prices and domestic industry viability. In fact, mineral policy at present appears to be a by-product of policies for other resources which have more strongly legislated requirements and are more vocally identified as of "public interest." Most notable are non-commercial, aesthetic and biological, resources. That is, in some cases, land seems to be left open to the mining and leasing laws only if mining would not conflict with any existing or contemplated use protected by legislative direction. Efforts to identify such uses as wilderness areas, endangered species habitats, recreation areas, and "areas of critical environmental concern" can give non-mining uses priority, usually for unspecified periods of time, and also leave the status of millions of acres of Federal lands not already formally closed to mineral entry highly uncertain. This uncertainty strikes at the most vulnerable national mineral concern--the need for exploration for future sources of supply, particularly for minerals on which the United States is currently dependent on imports. Table 1 on page 11 depicts the potential contribution of Federal lands to future mineral supply. This has occurred despite the fact that one of the purposes of the Federal Land Policy and Management Act of 1976 was to require systematic planning for multiple uses of Federal lands, recognizing their importance as sources of timber and minerals, and requiring review of decisions to withdraw lands from the mining and leasing laws.

Table 1

Potential Federal Land Contribution To Reserves
and Resources of Selected Mineral Commodities

| | Reserves at current prices (note a) | Hypothetical resources (note b) | Potential Federal vs. non-Federal (note e) | Imports exceed 50% of 1976 domestic consumption* |
|------------------------------|---|---------------------------------------|--|---|
| Aluminum, million ST | 10 | very large | Major | * |
| Antimony, thousand ST | 120 | small | Major | |
| Beryllium, thousand ST | 28 | huge | Major | |
| Bismuth, million lb | 26 | NA | Major | * |
| Cadmium, million lb | 220 | NA | Major | * |
| Chromium, million ST | NA | insignificant | Major | * |
| Coal, billion ST | c/ 437 | huge | Medium | |
| Cobalt, million lb | 540 | NA | Major | * |
| Copper, million ST | 93 | large | Major | |
| Fluorine, million ST | 16 | small | Major | * |
| Gold, million troy oz. | 100 | NA | Major | * |
| Graphite, million ST | NA | very large | Minor | |
| Gypsum, million ST | 350 | huge | Major | |
| Iron, billion ST | 4 | huge | Medium | |
| Lead, million ST | 59 | moderate | Major | |
| Manganese, million ST | NA | NA | Major | * |
| Mercury, thousand flasks | 430 | NA | Major | * |
| Molybdenum, billion lb. | 7 | huge | Major | |
| Natural Gas, tr.cu.ft. | 228 | large | Medium (onshore) | |
| Nickel, million lb. | 400 | moderate | Major | * |
| Petroleum, million bbl. | 33 | large | Medium (onshore) | |
| Phosphate Rock, million ST | 2,500 | very large | Major | |
| Potash, (K2O eq.) million ST | 200 | huge | Medium | * |
| Soda Ash, billion ST | 30 | huge | Major | * |
| Silver, million ST | 1,500 | moderate | Major | |
| Titanium, million ST | 32 | very large | Medium | |
| Tungsten, million lb | 240 | moderate | Major | |
| Uranium (U3O8) thousand ST | d/ 640 | large | Major | |
| Vanadium, thousand ST | 115 | NA | Major | |
| Zinc, million ST | 30 | very large | Medium | |

a/USBM estimate 1973.

b/Hypothetical resources. They are undiscovered but geologically predictable deposits of materials which are essentially well known as to location, extent and grade and which may be exploitable in the future under more favorable economic conditions or with improvements in technology.

c/Reserve Base

d/At \$30 per lb.

e/Based on the professional judgement of Task Force members.

Resource appraisal terms:

- Huge : Domestic resources are greater than 10 times the minimum anticipated cumulative demand (MACD) between 1971 and 2000.
- Very large: Domestic resources are 2 to 10 times the MACD.
- Large : Domestic resources are approximately 75% to twice the MACD.
- Moderate : Domestic resources are approximately 35% to 75% of the MACD.
- Small : Domestic resources are approximately 10% to 35% of the MACD.

Source: "Final Report of the Task Force on the Availability of Federally Owned Mineral Lands," Department of the Interior, 1977.

MINING AS A LAND USE

The amount and location of Federal lands currently used for mineral exploration or commodities under development is not precisely known. In 1974, the Bureau of Mines published the following estimate of mining as a land use of the total U.S. land base:

Table 2

Comparison of Land Utilized by the United States
in 1971, by Various Types of Use
(note a)

| <u>ACTIVITY</u> | <u>MILLION ACRES</u> |
|--|----------------------|
| Total United States | 2,271.3 |
| Agriculture (note b)..... | 1,283.0 |
| Cropland | 472.1 |
| Grassland pasture and range | 603.6 |
| Forest land grazed | 198.0 |
| Farmsteads, farm roads | 8.4 |
| Forest land not grazed | 525.5 |
| Urban areas | 34.6 |
| National park system | 29.6 |
| Fish and wildlife management (note c)..... | 28.9 |
| Highways | 22.7 |
| State park system | 8.6 |
| Mining (note d)..... | 3.7 |
| Airports | 3.3 |
| Railroads | 3.2 |
| Municipal and county park and recreational areas | 1.0 |

a/ Estimates based primarily on reports and records of the Bureau of the Census and Federal and State agencies

b/ 1969 data

c/ Estimate based on GSA Real Property Inventory

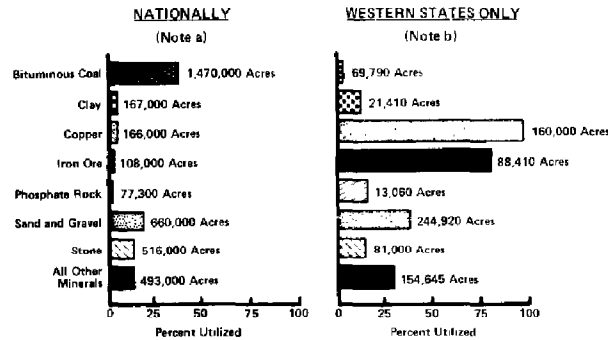
d/ Land utilized 1930-71

Source: "Land Utilization and Reclamation in the Mining Industry, 1930-71," Bureau of Mines Information Circular 8642.

The amount of land used and reclaimed for mining from 1930 to 1971 is graphically portrayed in the pie chart insert on the map on page 2. Nationally, mining used about as much land as airports or railroads in 1977. Mining used less than one fourhundredth of the national land area committed to agriculture. In that same year, the national value of minerals produced was about \$30 billion and the value of agricultural products was about \$44.5 billion.

Furthermore, the Bureau of Mines' estimate provided the following information on which commodities accounted for most land utilized for mining:

TABLE 3
LAND USED FOR MINING 1930-71



- a/ Total acreage utilized = 3,657,300 acres.
- b/ Total acreage utilized = 833,235 acres.

Source: "Land Utilization and Reclamation in the Mining Industry, 1930-71," Bureau of Mines Circular 8642.

As the figures in parentheses indicate, only 23 percent of the land used for mining was on the lands of the fifteen Western States containing most Federal lands. These estimations are not precise and do not reflect the effect of mines on adjacent lands used for such purposes as housing or public and commercial facilities resulting from the socio-economic change associated with mining. However, as the only figures produced by a Federal agency to analyze the problem, these estimates do offer perspectives on relative amounts and locations of land used for mining as compared to other land uses.

In 1978, according to Department of the Interior Public Land Statistics 1/, 12.6 percent (or 97,943,621 acres) of all Federal lands was under lease for mineral activities, primarily (96.5 percent) for oil and gas. Approximately 22 million acres (less than 3 percent of all Federal lands) were

1/ Bureau of Land Management, Public Land Statistic, 1978.

subject to claims under the General Mining Laws 1/. There is currently no way to determine how much of this acreage was used for exploration and how much for mining, nor how the total figure will change as exploratory targets are narrowed or new claims are filed.

By comparison, in this same period, the Fish and Wildlife Service managed 31.3 million acres (4 percent of all Federal lands) principally for fish and wildlife protection; the National Park Service managed 26.5 million acres (3.4 percent of all Federal lands) principally for preservation and recreation; and the Department of Defense managed 25.8 million acres principally for national defense uses and another 8 million acres for civil functions (4.4 percent).

THE PRIVATE SECTOR AND MINERALS ON FEDERAL LANDS

As table 4 on page 15 indicates, the Federal Government has a minimal role in minerals exploration compared to that of the private sector. Furthermore, for identification of favorable areas for mineral deposits, the Federal Government is extensively dependent on data produced by the private sector. The President's Nonfuel Mineral Policy Review draft report estimated that of the \$150 to \$220 million spent by private enterprise for mineral exploration in 1977, approximately \$75 to \$110 million, or 50%, was spent on Federal lands. The report also estimated that in 1977, the Federal Government spent about \$23 million on mineral examinations and exploration.

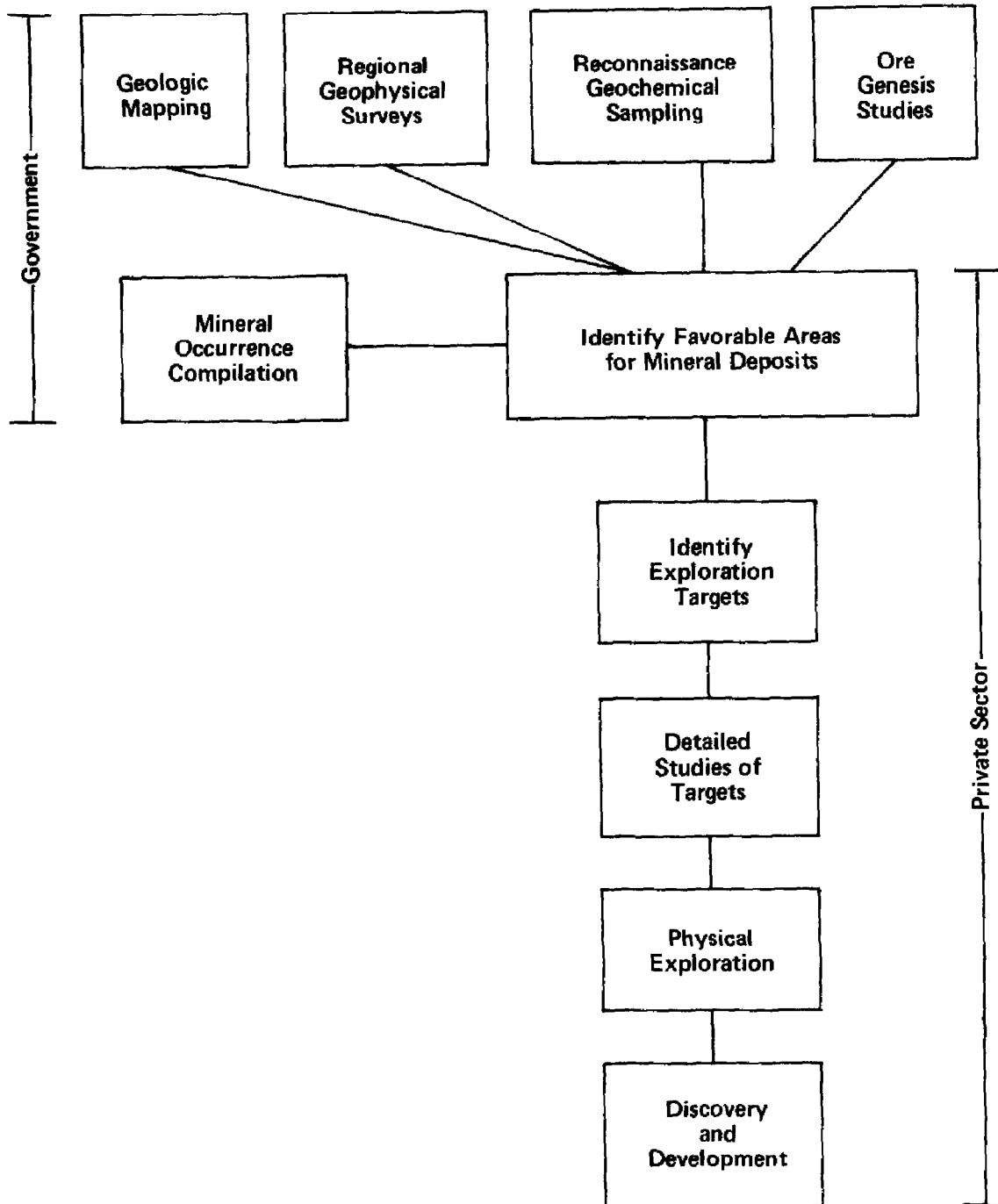
Most mineral exploration on Federal lands is performed by the private sector which makes decisions based on economic considerations. Mineral exploration is essentially a progressive investment in additional information with the objective of finding an ore body mineable at a profit. OTA's report, Management of Fuel and Nonfuel Minerals in Federal Lands (April 1979) included a table portraying "Estimated Cost, Acreage, and Time Ranges for the Exploration and Development Stages of Typical Mineral Exploitation Projects in 1977" (see table 5, p. 16). This table categorizes mineral occurrences by geological character--surficial, stratabound-extensive, stratabound-discrete, and discordant. 2/ Typical minerals derived from

1/GAO estimate based on about 20 acres per claim for about 1.1 million recorded mining claims, as reported by BLM in Managing the Nation's Public Lands, January 30, 1980.

2/Another categorization, from an economic perspective, results in three groups of minerals, placed primarily on an economic depletion basis--metallics, non-metallic industrial minerals, and energy-producing minerals.

TABLE 4

ROLES OF GOVERNMENT AND INDUSTRY IN MINERAL EXPLORATION



Source: U.S. Geological Survey, Geologic Division, Office of Mineral Resources

TABLE 5

Estimated Cost, Acreage, and Time Ranges for the Exploration and Development Stages of Typical Mineral Exploitation Projects in 1977

| Costs do not include land or overhead costs. (K = Thousand) (M = Million) | | | MINERAL OCCURRENCE CONFIGURATION | | | | | | | | | | | | | | | | |
|---|----------------|---------------|----------------------------------|-------|------------|-------------------|-----------------------|-------|------------|-------------------|----------------------|-------|------------|-------------------|------------|-------|------------|-------------------|------|
| | | | Surface | | | | Stratabound-extensive | | | | Stratabound-discrete | | | | Discordant | | | | |
| | | | Cost (\$) | Acres | Time (mos) | \$ Per Acre p. yr | Cost (\$) | Acres | Time (mos) | \$ Per Acre p. yr | Cost (\$) | Acres | Time (mos) | \$ Per Acre p. yr | Cost (\$) | Acres | Time (mos) | \$ Per Acre p. yr | |
| EXPLORATION | IDENTIFICATION | Low | 2K | 640 | 1 | 1K | 32K | 0.2 | 2K | 640K | 1 | 1K | 640 | 0.5 | | | | | |
| | | Avg | 39K | 21M | 7 | 38K | 146M | 8 | 0.004 | 98K | 18M | 9 | 0.007 | 25K | 86M | 6 | 0.006 | | |
| | | High | 590K | 640M | 18 | 362K | 640M | 42 | | 680K | 640M | 62 | | 635K | 640M | 60 | | | |
| | IDENTIFICATION | Low | 8K | 640 | 1 | 1K | 32K | 0.2 | 8K | 28K | 1 | 2K | 640 | 0.5 | | | | | |
| | | Avg | 80K | 216K | 10 | 0.44 | 135K | 902K | 10 | 0.16 | 783K | 19M | 11 | 0.45 | 82K | 266K | 9 | 0.41 | |
| | | High | 1.0M | 6.4M | 40 | 1.1M | 6.4M | 90 | | 22M | 25.6M | 60 | | 1.5M | 6.4M | 48 | | | |
| | IDENTIFICATION | 1 + 2 | Avg | 119K | | 17 | 0.26 | 173K | | 18 | 0.09 | 879K | | 20 | 0.25 | 107K | | 15 | 0.26 |
| | | INVESTIGATION | Low | 2K | 100 | 2 | 0 | 200 | 1 | 5K | 100 | 1 | 2K | 40 | 0.3 | | | | |
| | | | Avg | 72K | 4K | 11 | 20 | 536K | 6.5K | 12 | 82 | 205K | 26K | 10 | 9.5 | 123K | 3.9K | 10 | 38 |
| | High | | 360K | 60K | 40 | 5.7M | 25K | 40 | 1.8M | 1.5M | 88 | 1.3M | 40K | 90 | | | | | |
| INVESTIGATION | Low | 49K | 600 | 6 | 25K | 200 | 6 | 24K | 100 | 1 | 23K | 40 | 3 | | | | | | |
| | Avg | 2.6M | 4.1K | 29 | 252 | 1.7M | 6.6K | 29 | 107 | 4.3M | 7.3K | 27 | 262 | 1.5M | 1.7K | 22 | 481 | | |
| | High | 14.3M | 60K | 186 | 7.7M | 25K | 78 | 30M | 128K | 160 | 16M | 30K | 72 | | | | | | |
| INVESTIGATION | 3 + 4 | Avg | 2.6M | | 40 | 186 | 2.2M | | 41 | 100 | 4.5M | | 37 | 194 | 1.6M | | 32 | 343 | |
| | 1 to 4 | Avg | 2.7M | | 57 | 2.4M | | 59 | | 5.4M | | 57 | | 1.7M | | 47 | | | |
| DEVELOPMENT | STAGE 5 | Low | 5.1M | 1K | 36 | 22M | 1K | 12 | 362K | 500 | 4 | 3.5M | 50 | 12 | | | | | |
| | | Avg | 81M | 4K | 52 | 4.7K | 81M | 9K | 25 | 4.3K | 79M | 6.8K | 22 | 6.3K | 26M | — | 30 | — | |
| | | High | 502M | 13K | 156 | 185M | 25K | 42 | 361M | 100K | 90 | 406M | 6.4K | 84 | | | | | |

Source: Office of Technology Assessment, Management of Fuel and Nonfuel Minerals in Federal Lands: Current Status and Issues

TABLE 6
ILLUSTRATIVE MINERAL OCCURRENCE TYPES

| SURFICIAL | | NONSURFICIAL | | | | | |
|-------------------------------|--|------------------------------|---|---|--|-----------------------------------|---|
| | | Stratabound-extensive | | Stratabound-discrete | | Discordant | |
| Geologic Environment | Typical Ores | Geologic Environment | Typical Ores | Geologic Environment | Typical Ores | Geologic Environment | Typical Ores |
| Aluminous Clays and Laterites | * Bauxite, * Kaolinite | Bodded Precambrian | * Iron, Copper, Gold | Marine Sedimentary | * Oil and Gas, Bromine, Barite | Breccia Pipes | * Uranium, Molybdenum, Copper, Gold, Diamond |
| Laterites | * Nickel (Cobalt) | Marine Sedimentary | * Phosphate, Iron, Oil Shale, Manganese | Continental Sedimentary (Sandstones and Fossil Placers) | * Uranium (Vanadium), Gold, Titanium | Porphyries | * Copper Molybdenum, Gold, Tin |
| Stream Placers | Gold, Silver, Platinum, Tin, Rare Earths, Iron, Gem Stones | Marine Evaporite | * Potassium, * Sodium, * Sulfur, * Gypsum, Lithium, Magnesium | Lacustrine Evaporites | * Gypsum, * Iron, * Boron | Pegmatites | Lithium, Fluorine, Beryllium, Rare Earths, Mica, Feldspar, Columbium, Tantalum |
| Coastal Placers | Titanium, Zirconium, Chromium, Rare Earths, Gem Stones | Continental Sedimentary | * Coal, Oil Shale, * Boron, * Sodium | Fossil Laterites | Bauxite | Vein and Replacement Deposits | * Gold, * Silver, Copper, Alunite, Mercury, Lead, Zinc, Barite, Fluorine, Tungsten, Molybdenum, Uranium, Iron, Graphite, Gem Stones, Native Sulfur, Gilsonite |
| Residual Deposits | Barite, Iron, Manganese, Titanium, Phosphate, Columbium, Vermiculite | Continental Volcanic | Bentonite | Young Tuffs and Related Sedimentary | Beryllium, Mercury, Fluorite, Native Sulfur | Massive Sulfide Pipes | Copper-Lead-Zinc-Silver (Gold, Pyrite) |
| Brines in Evaporites | * Sodium, * Potassium, * Magnesium, * Boron, Lithium, Tungsten | Stratiform Igneous Complexes | * Iron, Chromium, Platinum Group Metals, Vanadium | Shale Hosted Massive Sulfides | * Copper-Lead-Zinc-Silver | Rhyolitic Volcanic | * Tin, Tungsten, Bismuth |
| Supergene Enrichment | Copper, Silver, Lead, Zinc, Gold, Manganese | | | Carbonate Stratiform | * Zinc-Lead-Barite-Fluorine (Copper, Cobalt) | Mafic and Ultramafic Intrusive | Nickel-Copper, Olivine |
| | | | | Volcanogenic Massive Sulfides | * Copper-Lead-Zinc-Silver (Gold, Pyrite, Barite) | Podiform Ultramafic | Chromium, Copper, Iron, Nickel, Asbestos |
| | | | | Metamorphic | Garnet, Kyanite, Graphite | Anorthosite Complexes | Titanium, Iron, Vanadium |
| | | | | | | Veins in Ultramafic | Asbestos, Talc |
| | | | | | | Veins in Metamorphosed Dolomites | Talc |
| | | | | | | Salt Domes | * Sulfur |
| | | | | | | Carbonatite and Alkalic Complexes | Phosphate, Rare Earths, Iron, Titanium, Columbium, Copper |

* Described in Ad Hoc Geological Committee on Remote Sensing from Space: *Geological Remote Sensing from Space* (1977)

Source: Office of Technology Assessment, Management of Fuel and Nonfuel Minerals in Federal Lands: Current Status and Issues

these geological categories are displayed in table 6 on page 17.

This information illustrates that (1) the same mineral element can be extracted from various types of geological occurrences, (2) mineral exploration and development costs vary within and between these occurrences, (3) costs of exploration increase tremendously as the target is narrowed over many months of examination, (4) successful exploration culminates in development investments of millions of dollars per acre, and (5) the amount of land affected decreases as exploration progresses. For hardrock minerals, it is this lengthy, complex, and expensive process which Federal mining laws and land-use policies must accommodate.

In addition to the great expense of mineral exploration activities, the remote chances of discoveries leading to development in each attempt make such activities highly uncertain under the best of conditions. Though minerals are everywhere, deposits with sufficient concentrations of needed elements which are amenable to extraction at a cost allowing a rate of return adequate to attract investors are exceedingly rare. An official of the Bureau of Mines has estimated that only one in one hundred mining ventures is a successful operation.

In the past, we have reported on the trend of increased U.S. reliance on imported mineral commodities. "The U.S. Mining and Mineral-Processing Industry: An Analysis of Trends and Implications," (ID-80-04, October 31, 1979) reviewed the relative disadvantage of domestic mineral exploration and development industries in the international market. Some of this disadvantage was attributable to U.S. Government policies for national interests other than mineral supply which have mineral policy ramifications that remain unexamined.

An August 1980 special study on economic change by the staff of the Joint Economic Committee of the Congress reported the following about the domestic mining industry as a whole:

"The image that emerges is that of an industry in decline--an industry whose productive capability is shrinking despite increasing product demand. U.S. mineral producers have been confronted with an erosion of cash-flow resulting primarily from a rapid escalation of costs. The result has been a steady decline in the average rate of return on invested capital, coupled with a rapid build-up of debt-equity ratios."

This report goes on to say:

"Regulatory activities are particularly important in the mineral industry--a high risk industry characterized by high fixed costs and product price volatility. To the extent that regulatory initiatives add to uncertainty, they impede investment in an already risky industry. In addition to the rapid cost escalation which has reduced mineral industry investment, the domestic industry now faces the prospect of increasingly uncertain revenues."

In this regard, uncertainty of access and tenure on Federal lands adds to the risks confronting potential mineral operations, from exploration through production. In addition, the additional costs imposed through such regulatory requirements as those for operating plan approval or royalty payments have far-reaching implications for investment in Federal land-related ventures. Traded on international markets, most mineral commodities are affected by price changes of only a few cents per pound and can be particularly affected by political or economic developments anywhere in the world. It is, therefore, important that regulatory costs and benefits be fully evaluated when they affect mineral activities.

The August 1979 draft report of the President's NonFuel Mineral Policy Review noted "For those Federal lands withdrawn or otherwise restricted, information on minerals potential is extremely limited." ^{1/} This report went on, however, to say, "The Mining Law of 1872 is one of the world's most liberal, least restrictive mineral development laws and constitutes a major subsidy to the nonfuel mining industry." Further, this document cited lack of hard evidence of decreased or overly limited mineral exploration and development on Federal lands and referred to "extensive mineral exploration and development on past and present public lands." These facts, plus the temporary nature of most withdrawals, Government-funded exploration of potential wilderness areas, and the availability of guidance on and expertise to assess mineral resource information for land managers led the report drafters to conclude that "for most land management decisions there is sufficient consideration of non-fuel mineral values."

In balance, the report admitted the possibility that some mineral evaluation programs are inconsistent with the needs of decisionmakers. It also recognized that general inaccessibility

^{1/}Though this draft report was never published in a final form, it was the only concrete product of the policy review and was the subject of extensive oversight hearings by the Subcommittee on Mines and Mining of the Committee on Interior and Insular Affairs of the House of Representatives.

of proprietary data to decisionmakers can make decisions less effective for minerals management; that long-range mineral market projections are highly uncertain; and finally, that local controversy and administrative difficulties can delay leasing and permitting for mineral activities. It did not, however, attempt to gauge the significance of these problems for long-range domestic mineral supply, blaming inadequate information and time. It also failed to recognize that any "hard evidence of decreased or overly limited" exploration will not become evident for fifteen to twenty years, when current domestic deposits near depletion and no new reserves have been added.

CHAPTER 3

LEGISLATION AFFECTING MINERAL

EXPLORATION AND DEVELOPMENT ON FEDERAL LANDS

Mining takes place on Federal lands through the operation of various laws, primarily the Mining Law of 1872, the Mineral Leasing Act of 1920, and the Mineral Leasing Act for Acquired Lands of 1947. A number of Federal agencies, including the Department of the Interior and the Forest Service, have responsibility for managing the surface Federal lands, but only the Department of the Interior administers the mining laws and is, therefore, the Federal "mineral manager."

The Federal Government's role in mineral management is primarily to administer the laws governing the private sector's mineral activities on Federal lands. The Federal Government manages its mineral resources by regulating private industry's exploration and development activities and deciding which Federal lands to leave open to private access and, to a lesser extent, how to manage areas closed to such access.

The mining and leasing laws, however, do not operate in a vacuum on the Federal lands. Surface management policies exist to preserve, protect, or enhance surface and aesthetic resources such as wilderness, parks, wildlife, and recreation areas. The pursuit of these other policies modifies the objectives for mineral resource development, primarily by excluding or putting conditions on private access to certain lands. Also, environmental protection policies such as those embodied in the National Environmental Policy Act and the Clean Air Act and its amendments directly affect mineral activities on Federal lands by limiting the areas open to mineral exploration and development and by adding conditions to the continuation of such projects.

NATIONAL MINERAL POLICY

The National Materials and Minerals Policy, Research and Development Act of 1980 (P.L. 96-479) aims to establish a coherent national materials policy and coordination of programs to assure the availability of materials critical to the economic well-being, national defense, and industrial production of the United States. It defines the term "materials" to include non-fuel materials and minerals. The Congress considers that notwithstanding the Mining and Minerals Policy Act of 1970 (30 U.S.C. 21a), the United States did not have a coherent national minerals policy.

The 1980 act mandates that the President, through the Executive Office of the President, (a) coordinate the activities of responsible departments and agencies in the materials area and (b) assume certain specific responsibilities, including assessing Federal policies at all stages of the materials (minerals) cycle, including tax policies. It also assigns several Federal departments and agencies specific responsibilities. Within one year of the date of enactment (Oct. 21, 1980), the President must submit to the Congress a program plan setting forth, among other things, the institutional changes within the Executive Office of the President necessary to fully implement the act. One of the minimum elements to be included in the plan is the location of policy analysis and decisionmaking within the Executive Office.

The legislative history of the 1980 act indicates that the Congress aimed to make the Executive Office of the President the locus of responsibility for coordinating and developing Federal materials policies, rather than to assign it to a particular Federal department or agency. "Elevating the leadership role to the Executive Office of the President should assure that departments and agencies will be permitted to exercise their responsibilities with an oversight of decision and policy coordination provided by the President." 1/

The Mining and Minerals Policy Act of 1970

Section 6 of the 1980 Act requires the President to direct the Secretary of the Interior "to act immediately within the Department's statutory authority to attain the goals contained in the Mining and Minerals Policy Act of 1970 (30 U.S.C. 21a). It establishes that the Federal Government should foster and encourage

- development of economically sound and stable domestic mineral industries;
- orderly and economic development of domestic mineral resources and reclamation to meet industrial, security and environmental needs;
- mining, mineral and metallurgical research; and
- reduction of environmental problems associated with mineral exploration.

1/Report no. 96-937, U.S. Senate, Sep. 12, 1980, p. 6.

These policies complement the objectives of the Federal mineral disposition laws; however, in some cases, they may conflict with the objectives of policies for other Federal land resources.

Implementation of the Mining and Minerals Policy Act has essentially taken the form of annual, state-of-the-industry reports from the Secretary of the Interior to the Congress. Other than the information collection and analysis activities of the Geological Survey and Bureau of Mines, the Department of the Interior has, in the past, performed limited national mineral policy formulation. In 1980, the problem identification and policy analysis functions of the Bureau of Mines were strengthened, but there is currently no routine requirement for inter-departmental review of such decisions which affect mineral activities as Federal land-use or surface management.

MINING AND LEASING LAWS FOR FEDERAL LANDS

The foundations of Federal land mineral resource policy, excluding those covered by the Materials Sales Act, are found in two mineral disposal systems established by three laws--a location/patent system and a leasing system. The operation of each disposal system depends on two factors: (1) the mineral to be disposed and (2) the status of the Federal land or mineral estate (public domain, acquired or withdrawn land). As of September 30, 1978, the Federal Government owned 711,961,024.2 acres of public domain and 63,288,159.2 acres of acquired lands. The Federal onshore mineral estate consisted of approximately 822 million acres, including public domain, acquired lands, and subsurface mineral rights beneath privately owned lands.

The General Mining Laws

The General Mining Laws and amendments establish a location/patent system for encouraging private exploration and development on public domain lands which contain valuable mineral deposits. The Secretary of the Interior is responsible for administering the law, but most of these responsibilities have been delegated to the Director of the Bureau of Land Management. The Director, in turn, has delegated some mineral examination functions to the National Park Service and the Forest Service through memoranda of understanding. Regardless of which agency manages the surface of the land and these delegations of authority, the Department of the Interior retains sole authority for such legal acts as granting a patent under the General Mining Laws.

The location/patent system permits a person to freely enter any public domain land not withdrawn from appropriation under

the General Mining Laws and to locate a claim upon discovery of a valuable mineral deposit. Tenure, under the General Mining Laws, is predicated on physical location and discovery of a valuable mineral deposit and an annual expenditure of \$100 for assessment work, which protects an individual's claim or group of claims against entry by another mineral prospector. Performance of annual assessment work, however, does not protect the claimant's tenure from contest by Federal mineral examiners, who can question a claim's validity at any time. A claimant, after demonstrating a discovery and spending at least \$500 on improving that discovery, can file for a patent which gives full title to the surface and mineral estate upon payment of a nominal fee and, thus, disposes of the land from Federal ownership.

The General Mining Laws state the following policy: "That all valuable mineral deposits in the lands belonging to the United States, both surveyed and unsurveyed, are hereby declared to be free and open to exploration and purchase." Originally, the Mining Laws' objective, to dispose of the public domain and to promote mineral development, was in concert with the prevalent public land policy of the time. This objective was designed to promote exploration and development of federally owned mineral resources.

The General Mining Laws do not define such key concepts as a valuable mineral deposit or what minerals are covered under the act. The Department of the Interior relies primarily on administrative decisions and Solicitor opinions in defining such key concepts.

In this way, substantive policies implementing the General Mining Laws are developed on a case by case basis, generally, with only procedural rules policies developed through the public rulemaking process. This policy formulation approach gives the Secretary of the Interior more discretion in administering these laws than may be generally recognized. Further, when the Department does publish rules interpreting statutory language or establishing standards for exercising discretionary authority, these rules are generally broad paraphrases of the original statute's language.

The Department of the Interior's policymaking approach has been to define administratively such concepts as "valuable mineral deposit" and to let the definition be endorsed in administrative proceedings or court cases. For example, the only departmental guidance for what constitutes a valuable mineral deposit is found in the Bureau of Land Management's Manual, which has no binding authority on the agency. The manual illustrates the Department's reliance on case law by citing judicial decisions as direction for agency personnel and the Department's marketability criteria, which are directly taken from a court case.

Discovery, another important concept of the General Mining Laws, is the first step in a prospective mineral prospector's establishing a valid claim to secure tenure. The definition of this concept is a flexible one; nowhere is it precisely defined, though criteria to test for valid discovery are established in the BLM Manual. In recent years, the Department of the Interior has imposed increasingly stricter standards for meeting the discovery test. An earlier discovery test, the "prudent-man rule," which required a claimant to demonstrate that a deposit had prospective profitability, has been superceded by a market-ability test, which requires demonstration that a deposit can be profitably mined at the time its validity is contested.

Considerable flexibility seems justified in light of the diversity of geological, economic, and environmental circumstances to be covered in implementation of the General Mining Laws. However, preventing flexibility from becoming vacillation and increasing uncertainty for tenure on lands also being appraised for other resources may be a problem. This problem may become more apparent as land use planning and single use designations circumscribe the "free and open to exploration and purchase" aspect of the General Mining Laws.

The leasing laws

In addition to the location/patent system of the General Mining Laws, the Federal Government uses a leasing system to dispose of certain minerals on Federal lands. The Mineral Leasing Act of 1920 (30 U.S.C. 181 et seq.) authorizes development of coal, oil, gas, oil shale, native asphalt, solid and semisolid bitumen, certain compounds of phosphates, sodium, and potassium on the public domain under terms of a lease. The Mineral Leasing Act of 1947 provides for leasing both hardrock minerals and minerals covered by the 1920 leasing act on acquired lands.

The leasing system was established to promote mineral development, to prevent monopoly and price fixing and to promote conservation of federally owned fossil fuel minerals. To achieve these objectives, the leasing system, contrary to the location/patent system, severed the surface rights of Federal land from the mineral rights, granted lessees rights only to the mineral resources, and gave the Secretary of the Interior discretionary authority to issue prospecting permits and leases. With the leasing laws, the Congress recognized the benefits to be realized by actively managing disposition of certain types of mineral resources, essentially those occurring in large, relatively predictable deposits, patenting of which would involve vast areas of land.

The Secretary of the Interior alone is responsible for administering the onshore leasing system for nonenergy minerals.

For energy minerals, the Department of Energy Organization Act assigns primary responsibility to the Department of the Interior for lease issuance and supervision and to the Department of Energy for some regulatory functions and development of production goals. The Secretary of the Interior has delegated the administrative functions of the leasing system to the Bureau of Land Management and the U. S. Geological Survey. The Bureau of Land Management administers all matters prior to the issuance of the mineral permit or lease, and the U.S. Geological Survey supervises operations after the issuance of the permit or lease.

The leasing laws affect various minerals differently. For example, maximum acreage requirements, leasing procedures, rentals and royalties, and the time limits for leases vary among the minerals. Also, there are two methods of issuing leases, competitive and noncompetitive. Competitive leasing occurs when the U. S. Geological Survey classifies an area as known to contain workable deposits of a leasable mineral. In areas not known to contain workable deposits, leasing is done noncompetitively. Recognizing these differences, we evaluate the administration of the leasing laws according to the particular mineral. A brief synopsis of previous GAO reports and current reviews of these subjects follows.

We have begun evaluating the coal leasing program in a series of GAO reports already issued. The first one "Issues Facing the Future of Federal Coal Leasing" (EMD-79-47, June 25, 1979) identified issues which may be important to this program and established a framework for subsequent reports.

A second report "A Shortfall in Leasing Coal from Federal Lands: What Effect on National Energy Goals" (EMD-80-87, August 22, 1980) reviewed Interior's first attempt to implement the coal leasing system, with an evaluation of the first lease sale proposed by Interior. Subsequent reports will be forthcoming.

The Federal coal leasing program represents a new mineral management trend--a transition toward integrating land use planning and mineral leasing. Officials of the Department of the Interior say it is the prototype for all Federal mineral leasing. Coal is uniquely managed as a result of the Federal Coal Leasing Amendments of 1976, which required lease sales only when the coal lands are included in a comprehensive land use plan, and leases must be issued by competitive bidding. This makes the coal leasing program the first to be legislatively tied to land use planning as well as giving the Department of the Interior an active exploration role. Further, the 1976 Amendments mandate an increased Government role in mining decisions by allowing the Department of the Interior to choose when and what tracts of land to lease for coal mining.

In addition to evaluating the coal program, we are reviewing the leasing of geothermal resources, oil, gas, and non-fuel minerals. In our report "How to Speed Development of Geothermal Energy on Federal Lands" (EMD-80-13, October 23, 1979), reasons were identified for the slow pace of geothermal development. The main reasons were economic and technological factors and not delays in processing permits and leases by the Federal agencies, although such delays were a contributing factor.

We have also reviewed the Department of the Interior's non-competitive oil and gas leasing lottery in "Onshore Oil and Gas Leasing - Who Wins the Lottery" (EMD-79-41, April 13, 1979). We identified weaknesses in the lottery system's internal controls and also raised the question of the efficiency of a lottery for ensuring orderly and timely development of resources and the receipt of fair market value.

A March 14, 1980 report, "Impact of Making the Onshore Oil and Gas Leasing System More Competitive" (EMD-80-60), analyzed S.1637, an administration bill to expand competitive leasing of onshore oil and gas resources. We found that the legislative changes were based on insufficient data and analyses and that the Department of the Interior has a limited basis for assessing the present oil and gas leasing situation and for evaluating impacts of proposed changes. Consequently, we suggested the Congress exercise caution in changing the present system, since it has resulted in significant production, and not adopt the bill.

"Actions Needed to Increase Federal Onshore Oil and Gas Exploration and Development" (EMD-81-40, February 4, 1981) discussed the need to make more lands available to leasing, reduce the number and severity of restrictive lease stipulations, and expedite the processing of Federal leases and drilling permits for oil and gas exploration and development. Also, we are currently evaluating the effectiveness of management control for nonfuel mineral leasing decisions and the consistency of policymaking decisions among State BLM offices.

LAWS THAT PROVIDE GUIDANCE FOR MINERAL ACTIVITIES ON FEDERAL LAND

The previously discussed laws permit mineral exploration and development on Federal lands, but the Federal lands constitute a great wealth of resource values, minerals being only one. A problem arises, therefore, when development of a mineral resource conflicts with preservation or development of another resource on a particular parcel of Federal land. The problem in such cases is to determine whether mineral operations can be effectively managed to allow concurrent or subsequent land uses. As pointed out in a previous GAO report, "Changes in

Public Land Management Required to Achieve Congressional Expectations" (CED-80-82, July 16, 1980) the surface management agencies must balance three competing, and sometimes conflicting, goals when managing the Federal lands

- using and developing resources,
- protecting and conserving resources, and
- maintaining the quality of the environment.

An examination of some of the multitude of laws which affect mining operations on Federal land follows. The objective of citing these laws is to highlight the lack of a coherent policy for judging which lands will be excluded from the operation of the mining and leasing laws, which lands will remain open, and how mineral resources of lands withdrawn from private access are managed. Currently, decisions with these mineral policy implications are made on a case-by-case basis with minimal consideration of their potential cumulative effects. Our purpose is not to suggest that every single land use designation locks up vital mineral resources; rather, it is to suggest that land use designations are not regularly examined from a total resource perspective, including mineral resource potential. Such an examination would include potential and cumulative effects on overall and future as well as specific, current domestic mineral supplies and prices.

Multiple-Use-Sustained-Yield Act
of 1960 and National Forest Manage-
ment Act of 1976

Policies for managing mineral resources on Forest Service lands are embodied in two legislative acts. The Multiple-Use-Sustained-Yield Act of 1960 (16 U.S.C. 528 et seq.) and the National Forest Management Act of 1976 (16 U.S.C. 472a) implicitly include mineral resources found on Forest Service lands.

In 1960, the Congress directed management of National Forests according to the principles of multiple-use and sustained-yield. These conservation principles require management of resources to allow an optimum rate of uses as well as a combination of uses. The objective of this act is to produce a sustained yield of products and services over time.

A comprehensive system of land and resource management planning was established for National Forest lands by the National Forest Management Act of 1976. This act established the requirement for plans at the National Forest level to prescribe the goals and strategies for specific areas of the Forest Service's lands.

Federal Land Policy and Management Act of 1976

The Federal Land Policy and Management Act of 1976 (FLPMA; 43 U.S.C. 1701 et seq.) has more direct and widespread significance for federally owned mineral resources than do the National Forest laws. FLPMA affects minerals through expressions of congressional policy, amendments to the 1872 Mining Law, and other provisions such as consideration of mineral values in withdrawal procedures, land use planning for BLM-administered land, an inventory of certain lands withdrawn from the operation of the mining and leasing laws. Further, this law establishes areas of critical environmental concern and the California Desert Conservation Area as new land use categories.

FLPMA represents a first attempt to solve some of the problems identified in the Public Land Law Review Commission's report One Third of the Nation's Land. The Commission, formed in 1964, conducted an extensive, 6-year review of the legal problems affecting the public lands and made recommendations to correct them.

Expressions of congressional policy in FLPMA

In FLPMA, three declarations of policy are particularly relevant to federally owned mineral resources. FLPMA section 102(a)(4) states congressional policy that "the Congress exercise its constitutional authority to withdraw or otherwise designate or dedicate Federal lands for specified purposes and that Congress delineate the extent to which the Executive may withdraw lands without legislative action." In addition, section 704 repeals most previous executive withdrawal authority. In section 102(a)(12), the Congress establishes that "the public lands be managed in a manner which recognizes the Nation's need for domestic sources of minerals, food, timber, and fiber from the public lands including implementation of the Mining and Minerals Policy Act of 1970 (84 Stat. 1876, 30 U.S.C. 21a) as it pertains to the public lands." Moreover, FLPMA states "the national interest will be best realized if the public lands and their resources are periodically and systematically inventoried and their present and future use is projected through a land use planning process coordinated with other Federal and State planning efforts."

Amendments to the Mining Law of 1872

Three amendments to the Mining Law of 1872 are in FLPMA. In section 314, recordations of unpatented lode and placer claims and unpatented tunnel and mill site claims are required

to be filed with the Bureau of Land Management. In addition, the annual filing of an affidavit of assessment work is required. The act further specifies that failure to file such records will constitute abandonment of a claim. Section 601(f) authorizes the development of reasonable regulations for mining claims in the California Desert Conservation Area. Section 603, which provides for the BLM wilderness study, stipulates the mineral management of potential wilderness lands and the application of the provisions of the Wilderness Act of 1964 after designation of BLM wilderness lands by the President. Specifically, this section requires in paragraph (c):

"the Secretary shall continue to manage such lands ...so as not to impair the suitability of such areas for preservation as wilderness, subject, however, to the continuation of existing mining and grazing uses and mineral leasing in the manner and degree in which the same was being conducted on the date of approval of this act: Provided, that, in managing the public lands the Secretary shall by regulation or otherwise take any action required to prevent unnecessary or undue degradation of the lands and their resources or to afford environmental protection. Unless previously withdrawn from appropriation under the mining laws, such lands shall continue to be subject to such appropriation during the period of review unless withdrawn by the Secretary under the procedures of section 204 of this Act for reasons other than preservation of their wilderness character."

General withdrawal
authority

Section 204(a) of FLPMA grants the Secretary of the Interior the authority "to make, modify, extend, or revoke withdrawals but only in accordance with the provisions and limitations of this section." Further, section 204 establishes three kinds of withdrawals (withdrawals of 5,000 or more acres, withdrawals of less than 5,000 acres, and emergency withdrawals), uniform procedures for making each type of withdrawal, and a 15-year review of certain withdrawn lands which are closed to the mining and leasing laws. For withdrawals of 5,000 or more acres, the Congress requires

--public notification and hearing for proposed withdrawals;

--various information and analyses, including a geologic and mineral resource report of the lands;

--notification to the Congress of withdrawals by their effective date; and

--congressional veto of withdrawals through enactment of a concurrent resolution.

In section 704, the Congress repeals numerous withdrawal laws and the implied executive withdrawal authority affirmed in U.S. vs. Midwest Oil Co. (236 U.S.C. 459).

Land use planning

Land use planning for BLM-administered lands is authorized in section 202(a) of FLPMA, which directs the Secretary of the Interior to develop, maintain, and revise land use plans. Criteria to guide this planning are

- (1) adherence to principles of multiple use and sustained yield;
- (2) use of a multiple discipline approach;
- (3) giving priority to designation and protection of areas of critical environmental concern;
- (4) reliance, as much as possible, on resource and value inventories;
- (5) consideration of present and potential uses;
- (6) consideration of relative scarcities of values and availability of alternatives;
- (7) weighing long-term against short-term public benefits;
- (8) provision for compliance with pollution control laws; and
- (9) coordination with other governmental bodies.

Management decisions to implement land use plans are also authorized by section 202(c), and the Department of the Interior has taken the position that such decisions can identify areas where mineral leasing can and cannot occur. The Congress stipulated "any management decision or action pursuant to a management decision that excludes (that is, totally eliminates) one or more of the principal or major uses for two or more years with respect to a tract of land of one hundred thousand acres or more shall be reported by the Secretary to the House of Representatives and the Senate." A legislative veto, by means

of a concurrent resolution within 90 days, is provided to eliminate such decisions reported to the Congress. Moreover, section 202(e)(3) stipulates that withdrawals under the 1872 Mining Law must be made through FLPMA withdrawal procedures.

Restrictive effects on mineral leasing of decisions authorized by section 202(c) of FLPMA are discussed in greater detail in a recent GAO report, "Opportunities Exist For More Federal Onshore Oil and Gas Exploration and Development" (FMD-81-40). We recommended in that report that the Congress clarify whether or not it intended land use management decisions to be used for determining whether lands are to be closed to mineral leasing.

Areas of critical environmental concern

Area of critical environmental concern (ACEC) is a new land use designation for Federal lands administered by the BLM. Section 201 of FLPMA, which authorizes special management of ACEC, defines them as "areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards" in section 103(2). Congress, in section 201(2), directs BLM to give priority to ACEC in preparing an inventory of BLM's public lands and resources and also, states that the "identification of such areas shall not, of itself, change or prevent change of the management or use of public lands."

Several factors regarding ACEC identification and designations have direct implications for mining activities on BLM land. First, no final deadline for ACEC designation was mandated by the Congress and, therefore, it will be a continuing activity and continuing uncertainty for mineral activity regarding the status of land. Second, BLM's ACEC guidelines do not place a numerical or acreage limitation on ACEC designations. Third, identification of an ACEC area calls for special interim management of the identified, but not designated, potential ACEC. More importantly, the identification process does not include consideration of alternative uses for a potential ACEC. This process can go on indefinitely and does not have a termination date.

BLM wilderness inventory

Section 603 requires a wilderness inventory of BLM lands, to be accomplished in a 15-year review of BLM's roadless areas of 5,000 acres or more and roadless islands. Areas with

wilderness suitability, as defined by the Wilderness Act of 1964, are to be identified, and mineral surveys, to be developed by the Bureau of Mines and U. S. Geological Survey, for lands the President recommends as suitable for wilderness. These recommendations are to be made to the Congress by October 21, 1991. In the interim, the Secretary of the Interior is directed to manage potential wilderness lands "so as not to impair suitability of such areas as wilderness, subject, however, to the continuation of existing mining and grazing uses and mineral leasing in the same manner and degree as was being conducted on the date of approval of this Act." In addition, FLPMA prohibits the Secretary of the Interior from withdrawing potential wilderness areas from appropriation under the mining laws unless the area is withdrawn for reasons other than preservation of wilderness characteristics. Congressional designations of wilderness are to be managed as stipulated in the Wilderness Act of 1964.

BLM's interim management plan for lands being evaluated for wilderness potential was recently successfully contested in court as being so restrictive as to represent virtual withdrawal ^{1/}. The court found BLM's guidelines "clearly erroneous." The Federal Government had not decided whether or not to appeal the decision as of the date of this report.

The Wilderness Act of 1964

A preservation policy for Federal lands, the Wilderness Act of 1964 (16 U.S.C. 1131-1136) has many mineral provisions. It authorizes the designation of suitable lands, by an act of Congress, for inclusion in the National Wilderness Preservation System and defines wilderness as "an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain ... an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation." Forest Service, National Park Service, wildlife refuges, and game range lands are included in the review.

Established to preserve and protect unimpaired wilderness areas in their natural condition for present and future generations, the act's largest implication for mineral development is revocation of all mining and mineral leasing laws in designated wilderness areas after December 31, 1983. However, the act does establish a policy for continuing the acquisition of mineral resource information in designated wilderness areas.

^{1/} Rocky Mountain Oil and Gas Association vs Cecil D. Andrus (U.S.D.C. Wyo., No. C78-265K, November 7, 1980).

The Engle Act of 1958

The Engle Act (43 U.S.C. 154-158) represents the first attempt by the Congress to establish uniform procedures for withdrawals by establishing withdrawal procedures for Federal lands that are to be used for defense purposes. Congressional designation is required for withdrawals over 5,000 acres to be used for a defense project or facility, and a case-by-case analysis of each withdrawal's effect on the operation of the mining and leasing laws, as well as laws for other natural resources must be done. All minerals in withdrawn military lands are to remain under the jurisdiction of the Secretary of the Interior. However, before exploration or disposition of minerals in withdrawn military land, the Secretary of the Interior must consult with the Secretary of Defense to assure such activities are consistent with the military use of the land.

The National Environmental Policy Act

In 1969, the Congress passed the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 et seq.); the goal of the act is to promote a harmonious and productive coexistence between people and nature. In NEPA, the Congress required Federal agencies, when proposing major actions which can significantly affect the environment, to make a detailed statement of the environmental impact of those actions.

NEPA has had a direct effect on the exploration and development of minerals on Federal lands. Decisions affecting mineral resources can be delayed by the preparation of an environmental assessment report or by lawsuits which challenge the report's adequacy. Before exploration or mining activities can occur under the leasing laws, an environmental assessment or impact statement must be prepared. On the other hand, an Interior Board of Land Appeals decision has determined that an environmental assessment is not necessary when a patent application is made, because patenting is not a discretionary act. Numerous resource management actions by surface management agencies have been delayed as a result of NEPA requirements and are discussed in the next chapter and in "Changes in Public Management Required to Achieve Congressional Expectations" (CED-80-82, July 16, 1980), a prior GAO report.

Wild and Scenic Rivers Act

Another Federal land resource policy, the Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1271 et seq.) establishes a national wild and scenic rivers system to protect selected rivers for present and future generations. Three classifications for rivers were identified--wild, scenic, and

recreation. The act provides for designated wild rivers and the land one-quarter mile from either side of a wild river's bank to be withdrawn from access under the 1872 Mining Law. The act permits the mineral leasing laws to operate on lands containing a wild, scenic or recreation river. For scenic and recreation river systems, a special act by the Congress or an administrative action is necessary to withdraw these rivers from appropriation under the 1872 Mining Law.

The Endangered Species Act and 1978 Amendments

Expanding an existing endangered species program managed by Interior's Fish and Wildlife Service, the Endangered Species Act of 1973 (16 U.S.C. 1531) prohibited Federal agencies from taking such actions as issuing a mineral prospecting permit or lease that would jeopardize the continued existence of a threatened or endangered species or destroy or adversely modify critical habitat. In 1978 Amendments, this prohibition on Federal agency actions was modified. To determine whether the benefits of the proposed Federal action would outweigh those of conserving a species or its critical habitat and no reasonable or prudent alternative was possible, an Endangered Species Committee was established to grant exemptions from section 7 under these circumstances.

However, a GAO report, "Endangered Species--A Controversial Issue Needing Resolution" (CED-79-65, July 2, 1979), concluded that the Congress needed to further amend the Endangered Species Act to permit more balanced decisionmaking between species protection and economic growth and development. In particular, the report recommended an amendment to limit the listing of endangered or threatened species on a geographical basis, when they may not be endangered or threatened throughout all or a significant portion of their range or when the species' overall statuses are unknown, to reduce potential conflicts with Federal programs. The Endangered Species Act can reduce availability of land for and increase the uncertainty and cost of mineral exploration and prevent development, and an amendment as previously suggested could make more land available to mineral exploration and development.

The Clean Air Act and Amendments

While the original Clean Air Act of 1967 had no special provisions affecting Federal lands, subsequent amendments strongly influence where and how mineral exploration and development can occur on Federal lands specifically. To protect health and welfare from the effects of air pollution, the Congress passed the Clean Air Act of 1967 and amendments in 1970 and 1977. With the 1977 amendments, the Congress

ratified the Environmental Protection Agency's Prevention of Significant Deterioration (PSD) concept and classification system, designed to prevent impairment of air cleaner than the level set by national ambient air quality standards. To this end, the 1977 amendments made a Class I status mandatory for all wilderness areas and national parks larger than 6,000 acres, which means that virtually any change in air quality is prohibited for affected areas. Further, these amendments preclude a change in this mandatory Class I status other than by act of Congress.

A report by the Western Regional Coalition, an alliance of western businesses, Land Use Implications of the 1977 Clean Air Act Amendments: A Western Regional Analysis, highlights the unique problems facing eight mountain States. The report, published in June 1979, depicts the vast areas of Federal and private land which is currently or potentially affected by the 1977 amendments. It also stresses the unusual difficulties facing development of valuable energy and nonenergy mineral resources, some of which are federally owned, as a result of the large Federal ownership of open spaces in States which already do or may in the future have Class I status under PSD provisions.

As the National Academy of Sciences report, Surface Mining of Non-Coal Minerals, points out, current models of atmospheric dispersion are not reliable predictors except for flat terrain. Thus, Federal land managers, having unreliable data on which to base land use decisions in mountainous areas, may be prone to use "worst case" forecasts to enforce the PSD concept.

Mining in the National Parks

Another set of policies, for national parks, also limit private access to Federal lands for mineral exploration and development. Historically, mining has been generally prohibited on National Park Service (NPS) lands, although certain areas have been left open to disposition under the General Mining Laws (e.g., Crater Lake National Park, Mount McKinley National Park, Death Valley National Monument, Coronado National Memorial, Organ Pipe Cactus National Monument, and Glacier Bay National Monument). In 1976, the Mining in the Parks Act (16 U.S.C. 1901 et seq.) was passed, significantly affecting mining in the six national parks and monuments previously left open.

The act does several things to mining activities in affected areas

- closes them to the Mining Law of 1872, subject to valid existing rights;

- restricts surface disturbance of the mining activities for holders of valid rights for a 4-year period;
- requires the Secretary of the Interior to determine the validity of unpatented mining claims and to submit to the Congress a report on whether any valid or patented claim should be acquired, and to assess the environmental consequences of mining activities in these areas; and
- requires the recording of mining claims on National Park Service lands.

A more detailed discussion of mining in the national parks follows in the next chapter.

CHAPTER 4

IMPLICATIONS OF DECISIONS AFFECTING MINERAL EXPLORATION AND DEVELOPMENT ON FEDERAL LANDS

Many complex factors, competing interests, and legal requirements influence Federal lands resource policies. Policies for promoting resource development must be balanced with the desire to preserve undeveloped and primitive Federal lands and to protect the environment.

The Congress declared, in the Mining and Minerals Policy Act of 1970, that it is in the national interest to foster and encourage private enterprise in the development of economically sound and stable domestic mining, minerals, metal, and mineral extraction industries. However, as discussed in the previous chapter, the Federal land laws which could achieve this objective may conflict with many other resource policies. Good decision-making requires that, where conflicts are unavoidable, competing policies be identified and trade-offs be made after a full analysis which strikes a balance between resource use and development, resource protection and conservation, and environmental protection. It also involves ensuring an appropriate balance and diversity among resource uses which are permitted.

To determine what minerals policy is for Federal lands, we examined a number of decisions affecting federally owned mineral resources and identified emerging aspects of mineral policy. We examined a wide variety of land use decisions to determine how conflict is resolved where the objectives of minerals policy conflict with other policies.

MINERAL POLICY AND LAND USE DECISIONS

Based on our discussions with Interior's personnel, it appears that no person or group within the Department monitors or evaluates decisions being made regarding other national policies for their effect on the role of public lands in meeting objectives of the Mining and Minerals Policy Act of 1970. The Director of the BLM told us that the agency is neither the mineral manager for the public lands nor is it responsible for the development of minerals policy. According to the BLM Director, the only minerals management functions the agency is responsible for are

- reviewing patent applications,
- approving validity determinations performed by the National Park Service on park lands, and

--issuing leases for minerals on lands managed by other land management agencies.

The Director acknowledged that there was a problem with minerals management on the public lands within Interior and cited two reasons why the problem exists. He stated that there is no minerals "advocacy" group within the Department to push for effective development of minerals as there is for wilderness. He also said the Bureau is unable to hire qualified mineral personnel because of a low grade structure. Other BLM officials we spoke to, both at headquarters and in the field, expressed the opinion that lack of concern for an effective minerals management program is evidenced by the failure of the Department to define a specific minerals management program and to hire qualified minerals staff such as geologists and mining engineers. Another headquarters official told us that the Bureau's mineral staff has decreased from 99 people in 1977 to 67 people at present. Further, the expertise of the people in the minerals area was questioned and many stated that it seemed to be getting worse. In a memo, dated May 25, 1979, from the BLM's Montana State Director to the Director of the BLM the minerals management situation was described as ". . . so critical in the technical minerals and mining field that BLM has reached the point that it can no longer meet and exercise its authority and responsibilities."

It was widely believed by the officials to whom we spoke, both at headquarters and in the field, that Interior has no minerals management program because priority has been given to surface resource protection. In fact, many of the agency officials in minerals management positions within Interior stated that they believe an "anti-mining" attitude shaped minerals policy in recent years. According to these officials, the cumulative effect of the Department's actions has been to discourage mineral exploration and development on Federal lands. Though officials of the current administration have publicly expressed a desire to enhance mineral exploration and development on Federal lands, only limited actions, primarily directed to oil and gas activities, have occurred to date.

Within the Department, serious questions have been asked for a number of years about the role of minerals programs in BLM, the skills and staffing needed to support minerals programs, and what management actions should be taken to improve minerals management. A staff geologist in the Bureau's California State Office on May 27, 1980, for example, advised the State Director that the Bureau's mineral program in California was in a serious state of decline in terms of mineral personnel and attendant programs. The state of decline, we were told, resulted from a high and wasteful loss of qualified geologists to the Forest Service or to private industry. The reasons in order of importance for geologists' leaving the Bureau's offices in California were:

- Lack of job satisfaction (geologists doing nonmineral work, and the feeling that the minerals program is treated as a nuisance by management).
- Lack of a nationwide Bureau mineral policy leading to management indecision and program frustration.
- Lack of a minerals personnel career ladder or of promotion potential.
- Geologists' grade structure being out of line with those of the Forest Service (the Service offers journey-people a GS-11, as does BLM, but the Forest Service recognizes more complex positions at the GS-12 level), as well as with the job opportunities available in the private sector.

Evidence of the decline in California's mineral personnel includes the following facts: (1) the minerals personnel positions allocated to California have been cut by 10 percent since 1978, (2) 20 percent of the available positions are currently vacant (in 1978 no vacancies existed), and (3) 17 percent of the positions in 1978 were held by apprentices (now 27 percent of the available positions are targeted for people with apprentice level skills).

These reductions in mineral personnel capabilities occurred despite the fact that since 1970 the Bureau's responsibilities for major resource management programs have increased rapidly and changed the agency's mission to an unprecedented degree. The problem concerning the lack of an effective minerals management program in Interior was summarized in an internal memorandum as follows:

"First of all, there is a need to define our terms. What does it mean to 'manage minerals'? If we mean 'surface protection' alone, the answers to the above questions are one thing. If we mean true management of the mineral resource as a resource, the same as timber for example, this is another thing and BLM will have to recognize everything this implies. It appears that BLM has never really defined what it means by 'minerals management', let alone decided whether it wants to manage minerals."

"It makes a lot of difference in our recruitment, training, career ladders, etc. If minerals management means surface protection then we need few, if any, geologists or mining engineers unless they are only interested in surface protection. If BLM wants to truly manage minerals as a resource, then it appears it ought to get moving and recognize what our true responsibilities are, what our true manpower, career ladder, training and related needs are (we undoubtedly need as many mineral professionals as range or forestry or more), what our system needs are, what our equipment and service needs are (remote sensing, labs, drilling, sampling, analysis, etc.), and let us get on with the job."

MINERALS POLICY ISSUES POSED BY CURRENT DECISIONS

In an attempt to identify how Federal policy for minerals management on Federal lands is developed, we identified some current decisions affecting minerals issues and examined them to see how decisionmakers seek a balance between preservation and development objectives and evaluate mineral policy implications. Decisions we selected for review were intended to represent the wide variety of Federal land use decisions and to include matters of national significance to mineral supply.

Proposals to take mineral rights for compensation or exchange

At the time of our review, the Secretary of the Interior was considering at least three proposals which involve the acquisition of or exchange of recognized mineral rights on Federal lands. These include a proposal to acquire or exchange phosphate leases in Osceola National Forest, a proposal to acquire mineral rights in six units of the National Park System including Death Valley and Glacier Bay National Monuments, and a proposal to acquire valid mining claims in Sawtooth National Recreation Area.

These decisions have significant mineral policy implications for several reasons including

- to our knowledge, the Federal Government has never before purchased mineral rights on the scale involved in these proposals, nor expressly to prevent the possibility of mining; and

--the proposals have not been subjected to rigorous analysis for possible effects on this country's potential supply capabilities, increased vulnerability to imports, the balance of payments deficit, and mineral prices.

Osceola National Forest
phosphate decision

In the early 1960s, several companies explored the area in and around the Osceola National Forest for phosphate rock-- a key ingredient in the manufacture of fertilizer. This search for phosphates was spurred by a growing world demand for fertilizer. In 1965, BLM issued prospecting permits to several companies involved in the phosphate exploration. These permits entitled the companies to a preference right lease if they discovered valuable deposits of phosphate within the permit area. From July 21, 1969 through May 25, 1972, companies holding 41 such prospecting permits applied for phosphate preference right leases on over 52,000 acres in the Osceola National Forest. Because of concern about the potential environmental harm to the forest caused by the phosphate mining, and civil action taken against the issuance of the leases, Interior has delayed adjudicating the phosphate preference right lease applications for over 10 years. In this period, a substantial change has occurred in the regulations governing preference right leases; none of the 41 permits have been administratively processed to a final decision under these new regulations.

On May 27, 1980, over 10 years after the first permit was issued, the Secretary issued a final decision on the Osceola phosphate leasing question. The Secretary decided to support legislation which

--precludes mineral development in the Osceola National Forest;

--provides that the Secretary shall determine whether or not the preference right lease applicants are entitled to leases within 2 years from the date of enactment of the legislation;

--directs the Secretary, if he determines that any applicant is legally entitled to phosphate leases, to exchange the rights to those leases for leases covering other minerals subject to the Mineral Leasing Act without competitive bidding;

- provides that exchanges shall be on an equal value basis, and that if the properties to be exchanged are not of equal value, the values may be equalized by payment to the lease applicant or to the Secretary of not more than 25% of the value of the leases being granted;
- provides for approval by the Congress of exchanges which the Secretary proposes; and
- authorizes the Secretary, if he is unable to effect an exchange governing any right to a phosphate lease, to pay just compensation for the value of the right to the lease.

To find out how this decision was made, we reviewed the secretarial decision document to determine

- what was the necessity of making the decision at this time, before administrative procedures have been completed, and
- how trade-offs were made between the concern for protection of the environment and the need for a secure and stable supply of the affected mineral commodities.

According to the secretarial issue document, the impetus for making the decision at this time was the fact that legislative exchanges for minerals were recently contemplated, and the parties involved were eager for a decision from the Department. However, it was not explained why it has taken over 10 years for the Secretary of the Interior to take action regarding this matter nor what the advantage to the public of exchanging phosphate leases for coal leases would be at this time.

Furthermore, though the ostensible purpose of the secretarial decision document was to present options to the Secretary to formulate a decision, the document begins by stating the assumption that lease issuance is an unacceptable solution due to stringent environmental opposition and political commitments made by the Carter Administration to forego development of the Osceola phosphate in response to strong State and local opposition. There is no discussion of the potential effects of this decision on mineral policy for the United States.

Mineral policy implications

Based on our review of the secretarial decision document and discussions with agency officials, the decision to legislatively prohibit phosphate leasing in Osceola was not a

product of balanced decisionmaking. Many mineral policy questions remain unanswered despite the Secretary's decision including:

- What is the potential liability of the Federal Government if rights to preference right leases are acquired?
- Specifically why is it necessary to acquire these preference right lease applications; are no cheaper protective means available?
- What will be the potential effects of withdrawing the phosphates in Osceola National Forest from development?
- Why is it necessary to direct an exchange or compensation now for these applications before the determination that the deposits are valuable has been made?
- How will these mineral resources be managed for future development?

Decision to acquire
mining claims on six
National Park Service units

Decisions regarding proposed acquisition of mineral claims in six units of the National Park Service demonstrate the many complex factors and competing interests and demands which influence minerals policymaking. In this case, the Secretary is faced with a decision of whether or not to allow mining in certain national park units with proven mineral potential. Although the Congress passed legislation in 1976 limiting production from operating mines and preventing mineral exploration in these park units, some mineral policy decisions still need to be addressed by the Secretary of the Interior. For example:

- Is mining in these national park units an either/or proposition i.e., under what conditions could mineral exploration and development occur? and
- What are the mineral policy implications, including mineral supply and economic ramifications, of withdrawing these lands from mineral development?

Although most units managed by the National Park Service were withdrawn from mineral exploration and development when established, the enabling legislation for three units, Crater Lake and Mt. McKinley National Parks and Coronado National

Memorial remained open to exploration and development under the 1872 Mining Law. Additionally, in three units, Death Valley, Glacier Bay, and Organ Pipe Cactus National Monuments, rights to mineral exploration and development were reinstated subsequent to their designation as monuments because of their historical or potential contribution to national mineral supply.

Mineral activities occurred for many years, but in June 1975, the National Park Service attempted to withdraw these lands from mineral development under the Mining Law of 1872. The issues arose when one of the claimants in Death Valley, located 44 claims adjacent to Zabriskie Point, a famous scenic lookout. Several newspapers and television networks picked up the story. Such conservation groups as the Sierra Club also became involved.

These developments precipitated in the Congress an examination of the appropriateness of continuing the operation of the mining laws in these National Park Service areas. Because mining activity involves surface disturbance, the presence of mining in the national parks was viewed by the Park Service and many members of the Congress as a fundamental conflict. A review of the legislative history shows that some members of the Congress felt that to set public lands aside as a national park and then to allow mining was inconsistent. Many members were adamant about preventing mining in any of the national parks and monuments unless there was an overwhelming need. Within 3 weeks after this publicity, three bills were introduced to the Congress seeking to prohibit or severely restrict mining in the national park system.

On September 28, 1976, the Congress passed the Mining in the Parks Act (Public Law 94-429). This law closed specified park system units to entry and location under the Mining Law of 1872. It also placed a 4-year moratorium on surface disturbance in Death Valley National Monument. Under section 4 of the act, for a period of 4 years, claimholders were prohibited from disturbing the surface of any lands for mineral exploration and development which had not been significantly disturbed for mineral extraction prior to February 29, 1976. For existing operations, however, the legislation permitted the continuation and even the enlargement of individual mining operations, subject to regulations.

Mineral policy implications

This decision represents a major minerals policy question --whether or not to withdraw identified mineral deposits from development. Death Valley is historically important for mining activities and contains substantial talc and borate deposits

plus the only domestic source of colmanite, a key ingredient in the manufacture of insulation. Glacier Bay contains what many experts believe to be the largest domestic deposit of nickel. Unlike the Osceola phosphate decision, however, no secretarial decision document was prepared regarding this issue. It appears that the only analyses of the issue were several reports prepared by the National Park Service. There are many mineral policy questions left unanswered including:

- Is it absolutely necessary that the minerals contained within the parks be withdrawn? Especially, the substantial mineral deposits in Death Valley and Glacier Bay National Monuments? Under what conditions can mining occur in these parks? Is it an either/or situation?
- Under what circumstances should the Federal Government buy out mineral rights? What will be done with the mineral rights once purchased? How much will it cost?
- Have the effects, both economic and aesthetic, been properly and adequately analyzed and considered?

Because of the uncertainty and importance of this issue, we are continuing to review this matter in greater detail.

Sawtooth National Recreation Area mineral withdrawal

The controversy surrounding mineral development in the Sawtooth National Recreation Area is similar to the mining in the national parks issue. Most of the questions regarding minerals policymaking raised for that issue apply for this case as well. The Secretary is faced with the question of whether the prevailing philosophy toward domestic supplies and knowledge of mineral potential at the time of withdrawal may have imposed mineral development constraints that are no longer in line with current national interests.

Idaho's Sawtooth Range was proposed for national park status as early as 1913. Legislation to establish the recreation area was first introduced in 1966. In 1972, the 754,000 acre area was withdrawn under P.L. 92-400 from the operation of the U.S. mining laws. An implementing 1973 closure order prohibited all prospecting and location of mining claims in the area. The right to patent existing claims was also withdrawn, but development of valid claims was allowed as long as the activity did not "substantially impair" the natural, scenic, historic, pastoral, and fish and wildlife values for which the recreation area was established.

As the Sawtooth National Recreation Area was adjoined to or surrounded by several mining districts, numerous mining claims had been located in it. By 1972, these mining districts had produced about \$85 million worth of silver, gold, lead, and uranium, and between 5000 and 7000 claims had been located in the recreation area. As of 1976, a Forest Service claim evaluation program had evaluated over 1200 of these claims, and about 100 appear to be legally valid discoveries. P.L. 92-400 specifically provides the authority to buy valid mineral interests to protect the recreation area's overall objectives.

A 1976 Forest Service report on the mineral situation stated that development of valid claims may create unresolvable conflicts with P.L. 92-400, the Wilderness Act and Service Wilderness Study Area policies. According to the report, the Service was apparently in a dilemma as to how to manage minerals in the area. They did not know whether the Congress intended that mining on valid claims be regulated so tightly that it would be restricted or foreclosed, or if the intent was to purchase mineral interests if mining threatens to conflict with other values. Over thirty locations in the recreation area were considered as potential sites for purchase or litigation as development of bona fide mineral discoveries could cause significant impairment to recreation values.

The concern over this issue has been heightened by the substantial acquisition of mineral data and increased industry interest in the area since its 1972 withdrawal. Practically all of the metals known to be present in the area are currently imported to meet domestic needs. There has been intense industry interest in the area's tin deposits, for which there is practically no other known domestic supply.

A 1974 Geological Survey/Bureau of Mines mineral assessment of the eastern part of the Sawtooth area labeled the area as being located in the most highly mineralized, productive, and promising mining region in Idaho (minerals are Idaho's second largest industry). This study area had past production of over \$5 million worth of silver, gold, lead, zinc, and copper. Its large undeveloped mineral resources include gold, silver, lead, zinc, copper, tin, and molybdenum. Mineral potential could exceed \$1 billion. An earlier mineral assessment of the western part of the Sawtooth area also found mineralization but to a lesser extent than the eastern part. Samples showed gold, silver, molybdenum and other metals. This western area is near or contiguous to six mining districts.

Mineral policy implications

The high mineral potential of the Sawtooth area and a national need for assured domestic supplies of affected minerals apparently have caused strong industry interest in continued examination of its potential. Development could conflict with the values for which the recreation area was designated. If existing mineral interests were taken to avoid such conflicts, large Federal expenditures would be required and the question of whether such an action would be a sound mineral policy and in the best interests of the country would remain unanswered. Additionally, it seems that no one in the Department of the Interior has any idea of the potential costs involved or how to estimate them.

Withdrawals of Federal lands from mineral activity

Access to much of the public lands for mineral activity has been restricted or prevented through the removal of these lands from operation of the mineral laws. Impetus for withdrawing the public lands, many with high mineral potential, usually arises out of a concern over the destruction of aesthetic natural resources and a desire for the preservation of these lands in a pristine and natural state.

Prevention of mineral exploration and development by private operators can be accomplished basically in three ways (1) withdrawals by an act of the Congress, (2) withdrawals by the executive branch based on legislative authority, and (3) executive branch use of discretionary power to prevent access. A recent report by the Office of Technology Assessment shows that millions of acres of Federal lands have been withdrawn from mineral activity or are highly restricted as follows:

| | <u>Formally closed</u> | <u>Highly restricted</u> | <u>Moderate or slight restriction</u> |
|---|---|--------------------------|---------------------------------------|
| | (Millions of acres) (status in 1975) | | |
| Federal onshore land for development of fossil fuel and fertilizer minerals | 321.1 (39%) | 81.4 (9.9%) | 421.3 (51.1%) |
| Federal onshore land for development of hardrock minerals | 271.4 (33.9%) | 48.4 (6.1%) | 480.1 (60.0%) |

Precise figures on the amount and location of Federal land on which mineral exploration and development is prevented or restricted are unavailable because the Department of the Interior does not maintain cumulative records. However, the magnitude of withdrawals is less important than the locations and information concerning mineral potential of such lands.

Wilderness designations

A major withdrawal policy which directly affects minerals policy goals is the designation of public lands as wilderness areas. As previously stated, the Wilderness Act of 1964 created the National Wilderness Preservation System. In addition to designating approximately 9 million acres of wilderness, the act also directed the Secretary of the Interior to study existing park and refuge units and permitted the Secretary of Agriculture to study Forest Service lands not included as wilderness to make recommendations to the Congress for additions to the Wilderness System.

The Department of Agriculture's Forest Service performed a study of these lands in 1972 in the Roadless Area Review and Evaluation program (RARE). The first RARE recommendations were criticized by numerous environmental organizations, and, in 1977, a new, expanded review of these lands known as RARE II was initiated. RARE II is a review process to identify roadless and undeveloped land areas on National Forest Service lands and to determine their general uses for both wilderness and other resource management and development. The RARE II recommendations were released in April 1979. Of the 63 million acres studied, approximately 10 million acres outside of Alaska were recommended for wilderness. During the review period, all 63 million acres were managed so as not to impair their wilderness characteristics.

In 1976, section 603 of the Federal Land Policy and Management Act authorized a review of the BLM lands to identify additional land as suitable for wilderness, to become part of the National Wilderness Preservation System. After 1991, all lands identified as wilderness by BLM will be withdrawn from mineral activity and areas with existing mineral rights will be subject to regulations to preserve wilderness characteristics.

BLM had been creating wilderness areas administratively since 1964 by designating areas as primitive or natural areas and managing them under rules comparable to those of the Forest Service. With the passage of section 603 of FLPMA, BLM essentially placed an administrative freeze on public lands other than Alaska until a determination was made of which

lands meet wilderness criteria. Though the legislation allowed 15 years to make these determinations BLM announced intentions to complete the wilderness inventory by 1980, 11 years ahead of schedule. BLM's interim management plan for wilderness study lands was based on a determination by Interior's Solicitor, published in September 1978, which stated that only existing uses, which were ongoing in 1976 could continue during the wilderness review of the study areas. This interpretation essentially put a halt to new or enlarged exploration on affected lands until the Congress acts sometime in the future. The amount of land affected, as the inventory progressed, has been gradually reduced to 23.6 million acres, when the inventory was completed in November 1980. As discussed on page 31, Interior's wilderness inventory and management policies, as they affect oil and gas leasing were judged incorrect, and the Department has adjusted its lease stipulation requirements accordingly.

The potential size of the National Wilderness Preservation System is huge. Approximately 30 million acres are now included, but another 122 million are under study, recommended, or part of further planning for wilderness designations. Therefore, the potential Federal acreage devoted to preservation of wilderness values and withdrawn from mineral exploration and development is approximately 26 percent of all Federal lands (or 8.8 percent of total U.S. acreage). Furthermore, the amount and quality of mineral resources information for the affected lands has frequently been described as limited and superficial. The very nature of lands suitable for wilderness designation--"untouched by the hand of man"--suggests that they are the least explored and obviously the least developed acres of the national land base.

Mineral policy implications

A multitude of wilderness bills may be acted on by the Congress in the next 10 years. It appears that the lands affected by these bills may be subjected to such uncertainty and such restricted management requirements that only nominal exploration or development is likely to take place on all Federal lands with any wilderness potential. In fact, Interior's interim management plan implied that all public domain lands were potential wilderness and subject to restrictions of mineral activity. Furthermore, deliberations on designations of lands for such single uses as wilderness, will be confronted by important policy questions. For example:

- Will lands nominated but not designated as part of the National Wilderness Preservation System return to free and open use for development?

- Under what conditions can wilderness areas with high potential for supply of critical, strategic minerals be made accessible to mineral development?
- What are the costs, both in lost opportunity and future administration, of totally preventing access for exploration and development of areas of known mineral potential?
- Have any wilderness land nominations been made under the assumption that unknown mineral potential means no mineral potential? Is existing information adequate on which to base prohibitive decisions?

We recommended, in "Actions Needed to Increase Federal Onshore Oil and Gas Exploration and Development" (EMD-81-40, February 11, 1981), that the Congress allow mineral leasing in future wilderness legislation for some reasonable period beyond 1983. Further, we expressed the opinion that the Congress should consider whether sufficient mineral information has been developed for Forest Service wilderness areas to support a decision that leasing should be prohibited after 1983.

The issues raised by the magnitude of areas being considered for designation as wilderness and resulting restrictions on mineral exploration and development are of a national significance. For this reason and to assist the Congress in reaching wilderness decisions which reflect a balance between preservation and continued mineral exploration and development, we are continuing to examine these issues in greater detail. Particularly, we are examining the amount, the form, and the availability of mineral information to support wilderness decisions.

Effects of surface protection restrictions on mineral development

Two actions, one imposed by the Congress and the other proposed by Interior, both designed to protect surface resources and aesthetic values of the land, increase competing demands constraining mineral activities on Federal lands. Neither was the product of a process for defining a specific problem and designing an efficient solution with only necessary cost and administrative requirements.

Surface protection moratorium

The first of these actions, the Mining in the Parks Act of 1976, imposed a surface disturbance moratorium on certain units of the National Park System which had been opened

to mineral exploration and development. Under the terms of the moratorium, claimholders are prohibited from disturbing the surface of any lands for the purpose of mineral exploration and development which had not been significantly disturbed for mineral extraction prior to February 29, 1976. The moratorium permitted on-going operations to continue subject to regulatory control in order to maintain production at an annual rate of production not exceeding the average annual rate for calendar years 1973, 1974, and 1975. The purpose of the moratorium was to maintain the status quo until Interior had performed its analysis of the situation and presented its findings to the Congress. Based on Interior's analysis, the Congress would determine whether to allow mining to continue in these park areas under strict regulatory control, to acquire the claims within these parks, or to allow mining to continue unabated. National Park Service officials have stated that even under the moratorium, mineral production has increased in these units while industry representatives contend that it is only a matter of time before the effects of the moratorium force them to close down their mining operations entirely.

Mineral policy implications

The surface protection moratorium imposed on certain units of the National Park System appears to have accomplished what it was designed to do--protect the aesthetic value of the park lands. However, its costs and effects on mineral supply seem to have never been fully evaluated by Interior. An official of the Bureau of Mines believes the moratorium may have been a contributing factor forcing the sale, in 1979, of the only U.S. producer of colemonite and ulexite-probertite--ingredients in the manufacture of energy conservation materials--to one of the largest U.S. glass fiber manufacturers. If the company should retain all mineral production for its own use (it now retains about 80 percent), and foreign sources of supply for these minerals (the only other deposit of this mineral is in Turkey) were disrupted, supply of these minerals would be restricted in the U.S. marketplace to one company. Accordingly, the mineral policy implications of this action are very noteworthy.

Further, the moratorium seems to be affecting the market for talc industries as well. Although production has increased for the present, the prospect of no future exploration or development within Death Valley beyond stated levels is discouraging marketing. One industry representative told us negotiations with a potential Japanese concern for the sale of talc has been jeopardized because of the moratorium. As indicated earlier, GAO is planning a review of the necessity and potential effects of eliminating mining in certain national parks and monuments containing nationally important mineral deposits.

Surface management
regulations for public
domain lands

The Interior Department has issued surface protection regulations for public domain lands which will affect exploration for and development of minerals subject to disposition by the Mining Law of 1872. The Secretary was required by